FEB 1 1947

Southern AERONAUTICS FLIGHT

Including MODERN AIRPORTS

February 1947
35 cents

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Silvaire
BY LUSCOMBE
See advertisement on page 7

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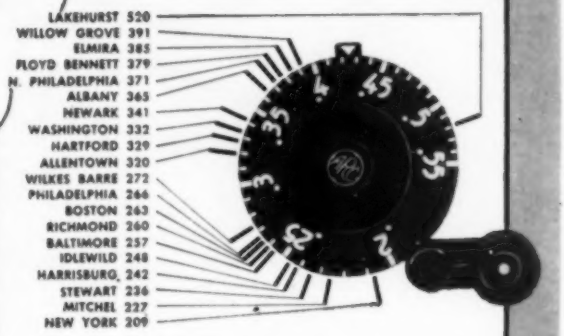
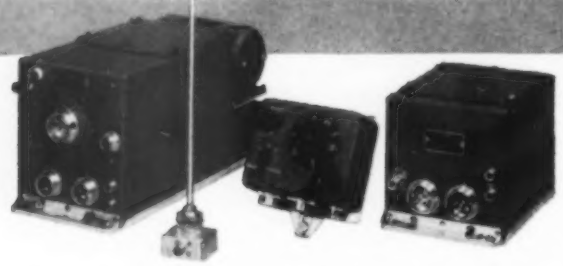
Center this map over your own home airport — and see if YOUR radio will match this reception logged by the R-11 Range Receiver of a standard A.R.C. Type 11 Communication System, flying over A.R.C.'s airport at Boonton, N. J.





Experienced pilots will tell you that reception like this—the ability to pull in the range signals and weather reports from any station within two hours flying—means safety as well as convenience in cross-country operations.

However, many pilots may not yet know how superior the new A.R.C. T-11 VHF Transmitter is for getting your air-to-ground communication through. Try it yourself—many CAA stations and towers are now guarding the new VHF frequencies of 122.1 and 122.5 MC.

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Selectivity: Signal 30 db down at 3 KC off resonance, and 60 db down at 5 KC off resonance

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Power Output: 1.1 watts

Modulation: Over 90% modulation capability

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$427 complete

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DEPENDABLE COMMUNICATION AND NAVIGATION EQUIPMENT

Boonton, N. J.

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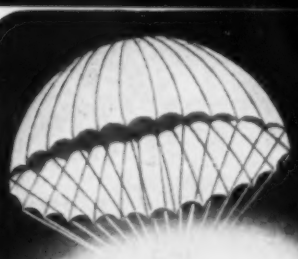

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For planes of any weight, scheduled or unscheduled operations. Sealed all-metal case assures longer effective service life. May be installed in wings or fuselage. Exceeds 200,000 candlepower.

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International Flare Signal Div

WESTERVILLE, OHIO

FEBRUARY, 1947 VOL. XXVII, NO. 2

Southern FLIGHT

including MODERN AIRPORTS

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..from take-off..

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through every mile of flight..

..to landing

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When selecting aviation accessories for reliability, light weight, and economy—*Eclipse is the answer!* When selecting instruments for practicability, economy, and accuracy without equal —*the answer is Pioneer!* Together, Eclipse and Pioneer point the way for major savings, bigger profits!

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TETERBORO, NEW JERSEY

DIVISION OF Bendix AVIATION CORPORATION

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3-24B

TAIL WHEELS

The 3-24B provides positive steerability—positive control, far beyond Rudder travel. With proper connector spring tension of 25-30 lbs., it will turn to 65 degrees either side of center, without full-swivelling, and every degree is pilot-controlled.

MAKES TAXIING EASIER

Neither strong crosswinds, nor rutty fields are troublesome to the pilot whose ship is equipped with a Scott 3-24B—because this *Automatic* Steerable and Full-Swivel Tail Wheel Assembly gives him *positive* taxiing control—without reducing his ability to "pivot" the ship on the field, or in the hangar. These designed-in Scott service and safety features are CAA approved for most Light Aircraft.

Established in 1932

SCOTT AVIATION CORPORATION
235 ERIE ST., LANCASTER, N. Y.

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AIR Report

Cross-Country Flying Increase in 1947

Five different 4-place models were being delivered at the beginning of 1947 at a rate of 448 monthly—237 Stinsons, 82 Navions, 60 Bellancas, 45 Seabees and 24 Fairchilds. By next January there will probably be ten or more different 4-place models to choose from—Beech Bonanza, Piper Skysedan, Cessna Airmaster, Waco Aristocraft and Luscombe, in addition to the familiar models now available. Sales prospects for the newcomers may be difficult to estimate at present, but current production plans for types now on the market indicate 1947 production of 4-place lightplanes will exceed 9,000 planes, as follows: 3,000 Navions, 2,000 Bonanzas and 4,000 Stinsons, Bellancas and Seabees. Less than 2,000 4-place types were delivered during 1946, almost three-fourths of which (1,436) were Stinson Voyagers. (Deliveries of private planes of all types by fourteen manufacturers during 1946 are summarized on Page 58 of this issue.) Most significant aspect of the anticipated five-fold expansion of 4-place deliveries concerns cross-country flying, which will be increased many times over that of 1946.

Navion Price Boosted

Factory flyaway price of North American Aviation's 4-place Navion was increased late in January from $6,595 (equipped with landing lights, radio and instrument panel) to $7,750. More than 300 Navions had been delivered and production was being increased steadily. The factory has plans for delivering a total of 2,400 Navions by October.

Silvaire Price Cut $200

Luscombe's deluxe 85-hp. Silvaire was reduced from $3,795 to $3,595 last month, fully-equipped but with the new Bendix VHF two-way radio optional. The same airplane was priced at $3,995 last Fall. A two-week shutdown at Luscombe late in January was made to alter some of the tooling and take inventory.

Ailor Ready for 6-Month Trial with Fly-Ur-Self Service

Operators interested in the National Fly-Ur-Self System were meeting at presstime in Kansas City with Howard Ailor, mainspring of the idea, to discuss the establishment of a six-month guinea pig operation of the rent-a-plane service. Ailor demonstrated a Navion equipped with a specially designed flight recorder which not only registers flying time but also records per cent of horsepower utilized. Proposed rates for the Fly-Ur-Self service are based on the pilot pulling only 60 per cent horsepower. If more horsepower is used, the rate goes up, thereby providing an incentive for the renter to go easy on the throttle. Ailor hopes to contract for his horsepower from a major engine manufacturer, just as large fleet owners of trucks buy mileage from the tire companies. Ailor has six Navions and six Beech Bonanzas on order for his initial guinea pig operating period.

In Brief

Sales of Grumman's new $115,000 Mallard amphibian were approaching the 30 mark recently, with Jack Burrus of Dallas and Superior Oil Company among those awaiting deliveries in February. . . . Louisiana is dotted with new airports for the private flier, with state activities led by T. B. Herndon, aeronautics director. In Louisiana, airplanes, airports, hangars and other aviation facilities are exempt from ad valorem taxes to encourage aviation development. . . . Addition of a large, outside baggage compartment door has made the Stinson 150 one of the most utilitarian lightplanes on the market. The new door measures 20½ inches by 17½ inches, and the compartment will carry up to 100 lbs. of baggage. . . . Liquidation of Taylorcraft Aviation Corp. has been recommended . . . Roy Taylor's Southwest Aircraft Co., of Fort Worth, delivered 481 new Aeroncas during 1946—largest distributor volume in the Aeronca organization. Les Bowman reports Aircraft Sales Co., also of Fort Worth, delivered 479 new lightplanes during the year—387 Pipers, 84 Stinson Voyagers and 8 Seabees. . . . Charles G. (Pete) Pearcy, Laredo, Texas, aviation director, says that city will make mighty attractive hangar propositions to operators interested in South Texas and Mexican business possibilities. ★ ★ ★

WITH THE *ALL-METAL*

Silvaire!

Distant shopping points and distribution centers . . . widespread business appointments . . . remote playgrounds or hunting and fishing spots—all are within hours' reach instead of days with SILVAIRE'S range of more than 600 miles . . . its 112-mile-per-hour cruising speed.

Flashingly beautiful, the SILVAIRE is *weather-proofed*. Its gleaming, all-metal skin defies the elements . . . it's never off the flight line for costly recovering jobs . . . it has no wood to rot or wear out. For beauty that lasts for years . . .for extra strength and safety. . . for low operating and maintenance costs—fly the 85 horsepower SILVAIRE Deluxe, the ideal plane for business, farming, sports and pleasure. Ask your dealer for a free demonstration flight.

Also available is the equally-rugged, economical 65-horsepower SILVAIRE Standard, with down-payment as low as $996. Flight instructions given free with your SILVAIRE.

MRS. T. C. McNEIL, JR.,
CHARLOTTE, N. C.

ASK THE PILOT WHO FLIES SILVAIRE

"My husband and I flew all models of post-war airplanes before we purchased the sleek, ultra-modern, all-metal Silvaire. We have already made a number of long cross-country flights at exceptionally low cost. With a cruising speed averaging 100 mph, our Silvaire costs approximately one dollar per hour for gasoline and oil. Total operating cost is approximately 3¾ cents per mile, including all insurance and other miscellaneous expenses."

LANDING GEAR THAT CAN "TAKE IT"

SILVAIRE'S sturdy, especially designed landing gear will stand up to exceptional abuse — its tubular steel structure is further strengthened by stainless steel tie-rods that will withstand 14,000 pounds pull. Semi-cantilever knee action gear, with hydraulic shock absorbers make landings gentle and easy. Landing gear fairing give increased air speed and clean, attractive lines.

For detailed information write Dept. SF

LUSCOMBE AIRPLANE CORPORATION
DALLAS 1, TEXAS

SILVAIRE by Luscombe is manufactured under U.S. Government Approved Type Certificate and is Government certified to be completely airworthy.

Silvaire BY LUSCOMBE

FIRST IN ALL-METAL PERSONAL PLANES

EQUIP *Your* ERCOUPE

with

SWITLIK
CHAIR CHUTES

and have COMPLETE Safety Protection

Check These Exclusive Features

Light Weight

Chutes weigh only 13 POUNDS EACH.

Comfortable

No interference with comfort or roominess of cabin interior.

Automatic Opening

Positive action Automatic Static Line . . . no rip cord required.

Quick Fitting

Quick, adjustable harness, fits anyone at moment's notice.

One Hour to Install

Done at your own airport in less than an hour, with no alteration to plane.

New Upholstery

Kit includes luxurious new cushioned upholstery, improving comfort.

$306.00 for 2-Place Kit

Clip the Coupon and Mail to

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Trenton 7, New Jersey, U. S. A.
Dept. SF

I am interested in equipping my airplane with parachutes. Please send me descriptive literature and price lists on the various Switlik Models.

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ADDRESS _____

CITY _____ STATE _____

NOW AVAILABLE . . .

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By Jacobs

First Hangar South
At Highland Park Airport
Dallas, Texas

That's right, Mr. Plane Owner, now you can get real service for your aircraft. We have moved from our temporary Preston Road location to our new PERMANENT 18,000 sq. foot hangar at Highland Park Airport, 8 miles due north of Dallas. You'll find fast, courteous, dependable service and repairs at our new shop. Our large, modern shop assures you of quality repairs on your airplane, large or small . . . yes, whether it's a low tire, a tail wheel greasing (free, of course) or a complete engine overhaul, the same cheerful, expert service is the keynote of our operation. Come in to see us next time in Dallas, won't you?

HIGHLAND PARK
AIRPORT
DALLAS, TEXAS

Jacobs Aviation Company

The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Who do you suppose is the oldest licensed pilot in the country?

We think maybe the first private pilot to enter this year's Sixth Annual Gulf Air Tour to Florida rates the honor.

He was Louis C. Dornbusch, from New York City—*65 years old and with better than 900 hours!* Ask him how he learned to fly at 58, and he says, "Anyone can learn—just start flying!" (Seems logical, doesn't it?)

Two days after he got his private license in 1941, Dornbusch entered the Fourth Annual Gulf Air Tour. But instead of terminating at Miami, he sizzled right along to Havana.

"Visited some friends," he explains.

We didn't find anyone in the Air Tour group who could top Mr. Dornbusch. But there were jillions of pilots who came down to Florida, and we doubt if we talked to all of them.

So if you're an older pilot—or know of one—will you let us know?

We see where an 8-year-old farm kid has 35 hours' worth of flying time!

Although he has to wait 8 more years before he can get a solo ticket, he's already a past expert at shooting landings.

Well, sir, if this laddie is old enough to set down a flying machine, he's old enough to learn the facts of lubrication. So look here, Johnnie . . .

To get the best motor oil, you have to start with the best crudes. And even after you've put the very best crudes obtainable through usual refining procedures, there are still certain elements left in the oil which are worse than useless in high-speed, high-temperature lubrication.

But an *extra* refining step known as the "Alchlor Process" is added on to the refining at Gulf. This *extra* step extracts *extra* amounts of the trouble-making petroleum elements that ordinary refining is unable to reach. That's why you get *extra* lubrication from Gulfpride Oil.

Got that name, bub?

"Gulfpride Oil!"

LITTLE KNOWN FACTS DEPT.

Here are this month's fascinating "Little Known Facts About Well Known Planes."

They're good . . . they were accompanied with proof . . . and their senders have received beeootiful commissions as Perch Pilots (bottom rung), just as you can if your "Fact" is good enough to print and arrives (address above) with *proof*.

Bob Stackowisk, LaSalle, Ill. is a Perch Pilot (br) because:

"The XP-81 has about as much power as the 4-engine B-29!"

And Richard Thwaites of Grand Rapids, Mich., qualifies with:

"The XB-36 has enough power to run about 90,000 model planes of average size (at 1/5 hp per each)!"

All right, what's yours?

Send it in today.

Gulf Oil Corporation and Gulf Refining Company...makers of

GULF **GULF AVIATION PRODUCTS**

CHECK FIRE EXTINGUISHER FREQUENTLY FOR UNOBSTRUCTED DISCHARGE HOLES AND···
UNBROKEN SAFETYING ON DISCHARGE HANDLE. BE POSITIVE EXTINGUISHERS ARE
···IN GOOD ORDER BECAUSE IF YOUR PLANE BURNED UP HOW COULD YOU USE THAT
GOOD GULF AVIATION GASOLINE!
GULF

Just among ourselves

EDITORIALS

PARADOX FOR CONGRESS

THREE incidents last month provide the basis for a realistic approach to many serious problems affecting aviation. With proper perspective and intelligent appraisal, the three happenings may be woven into an argument for the complete overhaul of Federal policy toward aviation, especially now that we have a fresh, crusading Congress in Washington.

The first has to do with a well-known newspaperman who wrote a very significant piece about alarming communist penetration of the several Latin American republics. His newsworthy report was made possible by an airline voyage to all of the South American capitals in the matter of very few days. How long would it have taken in 1920?

We doubt very much if the American people, or the reporter for that matter, realize what terrific impact our world-wide air transportation system is having on the social, political and economic life of the world. Does our American Congress realize it?

The second incident occurred when a plane load of passengers aboard a Chicago & Southern DC-4 from Cuba to New Orleans had to land at Memphis because New Orleans' Moisant International Airport was fog-bound. The passengers remained aboard the plane at Memphis all night because Memphis was not a port of entry with U. S. Customs, Immigrations and the Public Health Services available. After a hard night customs and public health officials arrived to inspect passengers and crew. A local assistant collector of customs was appointed acting immigrant inspector by immigration authorities in New Orleans, and the last passenger was cleared about noon. Does Congress realize such things are happening almost every day in this so-called "air age"?

The third incident that must be woven into the fabric of our argument that Federal air policy is outmoded and in need of overhaul is the one announcing Congressional investigation of recent airline accidents. In a large measure, these investigations no doubt will touch on sensitive points which, in the final analysis, will be a case of Congress investigating Congress. Do our elected Washington officials realize that President Roosevelt removed by edict the independence of our Federal air agency which was established by the Congress under the Civil Aeronautics Act of 1938 and that the presidential edict, handed down as a typical "emergency" New Deal measure, has never been rescinded?

Does not our Congress see the incongruity in the Veterans Administration spending millions of dollars for GI flight training, creating thousands of new airmen, while the Bureau of the Budget and economy howlers in Congress reduce beyond sensible minimums all the responsibilities assumed and preempted by the Federal Government, especially in the matters of air navigation aids, air traffic control and the collection and dissemination of weather information?

In the forthcoming congressional investigations of aviation matters, let the Congress be honest with itself and search its own soul to learn where it has fallen down on the job. Instead of taking the old approach of hanging the bell on a minor culprit, we earnestly hope that this Congress will distinguish itself by avoiding superficial symptoms of the disease and get down to the disease itself.

It's mandatory that our new Congress accepts the responsibility of placing the aviation ship of state back on the beam, operating under a renovated Federal air policy commensurate with public safety, convenience, necessity and technological changes which have taken place since the Civil Aeronautics Act was adopted in 1938. Unless the approach is total, only chaos and financial ruin will accrue to our civil aviation structure which has, up to now, been the envy of the entire world.

UNITY IN THE GRASS ROOTS

THE simon pure small businessman of aviation is the chap who usually is referred to as a fixed-base operator. Some six thousands of them now engage in miscellaneous sales and service enterprises on more than 3,000 airports. Lacking strong national organization, these rugged individualists do not command the attention, understanding or respect they deserve for the important role they have in the national aviation picture.

It's the fixed-base operator who largely determines whether local public opinion, especially in medium and small communities, is favorable or resentful toward the airplane. It's aviation's little businessman on the local airports who, because of his grass-root identity, wields a power not generally recognized by their larger brothers in manufacturing enterprise, the scheduled airlines or in the military services. Too often the airport service operator is looked upon as somewhat of an upstart. He's generally ignored or tolerated rather than appreciated or respected for his influence on our aviation progress.

The little operators of this country deal with aviation's largest consumer group — a numerically large army of our citizens who buy or rent airplanes, have airplanes serviced or repaired, who purchase instruction, charter planes, have crops planted, dusted and sprayed, pipelines and forests patrolled or otherwise patronize the fixed-base operator.

Insofar as important public and political opinion is concerned, our FBO's influence is also overlooked. Right down on the grass roots he comes in daily contact with people in his community who have little or no interest in aviation, such people as the local newspapermen, the civic leaders and elected public officials.

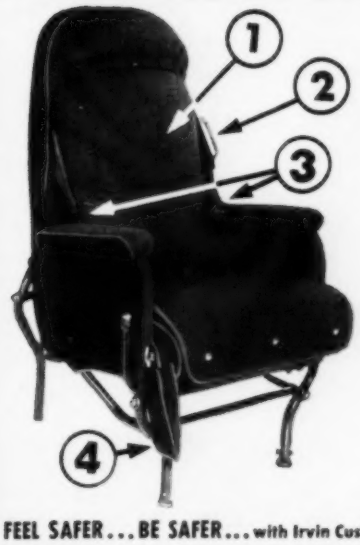
Will any one deny the growing importance of trying to control and direct along sensible lines the wave of local, county and state aviation taxa-

(Continued on page 47)

ALL SET
for SAFER flying

THE Irvin Custom-built *Chair* Chute is a new conception in parachute protection for cabin planes . . . a chute that combines beauty, convenience and comfort with tested safety. Now you can enjoy all the advantages of a chute without the necessity of "wearing" a chute . . . or of "remembering" it . . . or carrying it about . . . or finding a place to store it. For Irvin Custom-built *Chair* Chutes become a part of your plane . . . are fitted into the back of every seat. Merely step into your plane and parachute protection is yours.

More and more private plane owners and companies using planes for business travel are installing Irvin Custom-built *Chair* Chutes . . . for added protection in flight. Write today for descriptive circular and particulars about Irvin Custom-built *Chair* Chutes for the plane you own or plan to buy.



1 This is the Irvin Custom-built *Chair* Chute, fitted into the back of the seat, upholstered to match the rest of the chair.

2 The rip cord handle is big . . . convenient. The chute itself is a comfortable back rest . . . does not take up extra space.

3 The harness is tucked into the side of the chair . . . out of the way but instantly available. You can put it on in a jiffy while seated.

4 Lower part of the harness is set in this handy pocket. When you stand up, with the harness on, the chute lifts out of the chair.

FEEL SAFER . . . BE SAFER . . . with Irvin Custom-built Chair Chutes

Illustrations show Irvin Custom-built *Chair* Chutes installed in Beechcraft and Ercoupe planes. Normally you fly without the harness . . . comfortably . . . safely. In an emergency, the harness is buckled on in a jiffy and you are ready for any eventuality. Irvin Custom-built *Chair* Chutes cost little and are easily installed.

IRVIN Air Chute
The Life Preserver of the Air

IRVING AIR CHUTE CO., INC.

1670 JEFFERSON AVENUE, BUFFALO 8, NEW YORK

Southwest Parachute Co., Leon McKennon, Pres.
4347 Lovers Lane, Dallas, Texas
Distributor for Texas, Oklahoma, Arkansas, Tennesee

Flying the Bellanca

Cruisair setting down at Highland Park Airport near Dallas. Although the Bellanca goes places at 150 mph., it stalls at only 45 mph. with wheels and flaps down and handles remarkably well at slow speeds. Best approach speeds are 80 mph. on cross-wind leg, about 70 mph. on final, and 60-65 over the fence.

Combining fast cruising and low stalling speeds, the 150-hp. Cruisair is hard to match performance-wise.

By JOE JAMES
Associate Editor

THERE isn't a four-place design in public use today that can boast more speed per horsepower than the Bellanca Cruisair. There are four-place planes that can equal or better it in other features but, as a performing airplane, the Bellanca is in a class by itself. Designed for cross-country flying rather than airport bouncing, the long-snouted Cruisair with an Aeromatic propeller can get off in 9 seconds under light wind conditions, climb better than 800 feet a minute with no flaps, and go places at 150 mph. Add to that a 46 mph. landing speed and you have 150-hp. performance that is incomparable.

While the Bellanca's rakish lines and performance promise a hot airplane, it is remarkably easy to fly. This became evident when Bill Pope, salesman-pilot for Weatherly-Campbell Aircraft, began our check-out at Highland Park Airport in Dallas.

"Hop in the left seat and take her around," Pope urged.

"No thanks," I countered. "You take her around first."

Pope shrugged his shoulders as though to say, "Okay, but any dope can fly this airplane." Using one-quarter flaps for take-off, he got the Bellanca off in a 450-ft. run, then nonchalantly let the nose rise until the Cruisair literally stood on its tail.

"Don't climb faster 'n eighty with flaps," he suggested, cranking the wheels up as casually as a fisherman reeling in an empty hook. "Takes about 32 turns to crank up the gear. No trouble once you get the knack."

Warning System for Gear

With the wheels up and a thousand feet of altitude, he pushed over to cruise attitude and banked down-wind to start a landing approach. Indicated air speed had already jumped to 140 mph. As we learned on cruise tests later, it doesn't take the Cruisair long to get going once you shove over to level flight. "You can crank down the wheels at any speed," Pope went on. "Here's a good safety check." He throttled back to 1,500 rpm., a warning bell jangled and a red light flashed on the panel. "Now we'll just crank down the gear and the bell should stop." As the wheels reached the extended position the bell quit ringing and the light faded. A visual indicator on the wing also shows the gear position.

Banking cross-wind, Pope dumped quarter flaps and let the air speed sink to eighty. Flaps are operated manually in much the same manner as those on the Cessna 140 or Stinson Voyager. The handle is a bit more difficult to reach and is located well back under the instrument panel. Three positions provide one-quarter, one-half or full flaps. Pope dumped full flaps on final and left on a little throttle. As we crossed the boundary he cut power and let the Bellanca settle to the runway. "Nothing to landing," he grinned as we touched. "You'll see when you try one."

On my first take-off, I was as busy as the proverbial one-armed paper-hanger. That 80-mph. climb with first position flaps is uncomfortably steep to anyone but a jet pilot. Like any newcomer, I unconsciously shoved the nose over to a comfortable 110-mph. attitude as I started cranking up the wheels. That wouldn't do—not with flaps down—so I hauled up the nose again and cautiously got back to my cranking. " . . . sixteen . . . seventeen . . . eighteen . . ." Holding the control wheel in climbing from take-off while you crank the gear is comparable to rubbing your stomach with one hand and patting your head with the other. In all fairness to Bellanca, however, the task becomes easier after a couple of take-offs. But it takes conscious effort for pilots accustomed to flipping a switch on the panel or yelling "geah up!"

Except for cranking up the wheels, flying the Bellanca is duck soup. Any lightplane pilot who can land easy-to-fly planes like the Luscombe, Funk, Stinson and so on should have no trouble checking out in the Cruisair. Two landings convinced Pope I was safe to go cross-country in Weatherly-Campbell's unmarred demonstrator—proof enough that any dope can fly the Bellanca.

On the following day, we spent three hours getting on terms with the Cruisair. With observer and photographer, full tanks and 50 lbs. shy of gross load, we climbed leisurely to 4,000 feet and squared away for a test run over a measured 31.5-mile course. The factory recommends 2,430 cruising rpm. for the 150-hp. Franklin engine but we used only 2,375. That will probably be about the speed an owner will use. Holding 4,000 feet, we flew the westbound course in 11 minutes and 36 seconds. The trip back over the same run took 12 minutes and 50 seconds; or an average time of 12 minutes and 13 seconds for the 31 mile flight. On a computer that turns out to be 152 mph. ground speed. Indicated air speed averaged 150 mph. and reported outside air temperature was 3 degrees Centigrade at 4,000 feet. This would give the Bellanca a true air speed of 160 mph. The test route was approximately at right angles to a 25 mph. wind from 14 degrees. This, plus inadvertent crabbing, accounts for the difference between ground speed and true air speed.

Maximum rate of climb for the Cruisair is advertised as better than 1,100 feet a minute. That kind of performance is obtained by using quarter flaps. Just to see how fast the Bellanca would get upstairs at three-quarter throttle with no flaps, we started an easy 85-mph. climb and began clocking at 2,000 feet. It took us 2 minutes and 17 seconds to reach 4,000 feet; or a rate of climb of 830 feet a minute.

Flight Characteristics

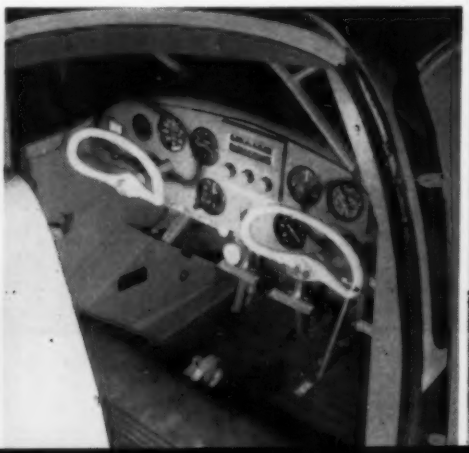
To learn a bit more about the Cruisair's landing characteristics, we ran through a series of stalls at 4,000 feet. With power off, wheels down and full flaps the Bellanca unloaded at 46 mph. indicated. In steeply banked turns, with flaps and wheels still down she paid off at 55 mph. With wheels down and no flaps—straight and level—the stall started at 50 mph. Stall characteristics are in keeping with the current trend toward maximum safety in personal planes. There is no abrupt loss of flying speed. As the stall approaches, you can still use the wheel to keep wings level.

That nose-high climb attitude after take-off made us wonder what would happen if the engine suddenly quit. Just to find out, we pulled up into an 80-mph. climb and then chopped the throttle. Then, imitating a pilot who fails to get the nose over in a hurry when an engine quits, we very leisurely applied forward pressure. There was still plenty of control and the maneuver was perfectly safe. The only way that take-off climb could get a pilot into trouble would be if he tried to whip back toward the field without first shoving the nose over to keep flying speed. That's bad business in any airplane.

Stalled in a left turn, the Cruisair can be rolled into a right bank with aileron alone. This feature is not news—the same thing can be done in the Navion, Swift and Stinson—but it is something to be appreciated when landing in gusty cross-winds. Control is also good in slow flight at speeds just above stalling. You can hold 50 mph., add enough throttle to maintain altitude, and slam the Bellanca around like a novice. You can do this in other airplanes, too—but few cruise at the Bellanca's 150 mph.

Excellent stability makes the Bellanca an easy airplane to fly. However, you'll find it handles quite a bit differently during airport approaches than similar models with retractable gear and flaps. For one thing, dumping the wheels does not slow the speed very quickly. If you wait until the down-wind leg to crank down the wheels you'll find yourself turning final with better than 100 mph. Best procedure is to crank down the wheels as you enter the traffic pattern. And don't plan on slowing down the Bellanca by easing off throttle *before* you put the wheels down. This doesn't work out so well;

Airborne in 450 feet (top) the Cruisair gets off in a hurry. Landing gear, retracted manually, folds back into the wing. Full flap approach brings the Bellanca over obstructions in a 75 mph. power-on glide.



View from rear seat during cruise test (left below) shows seat width, overhead clearance, and interior fittings. Cabin close-up (center) reveals how curved door fits into fuselage. Note hand grip at upper right corner. Radio is centered on instrument panel and throttle is just below it. Landing gear crank base is visible just below seat. Wide landing gear (right) aids in ground handling and minimizes danger of ground-looping.

—(SOUTHERN FLIGHT Photos by Tom Collins.)

to get the speed down you have to throttle back around 1,500 rpm. and that starts the gear warning bell.

Flaps are not overly effective. You can't crowd the field and then expect to dump full flaps and come straight down. The recommended 70-80-mph. approach with full flaps brings you in at a 30-degree angle. To put the Bellanca in a short field you make a rather flat power-on approach and then chop the throttle over the fence.

Flaps can be retracted during flight with no sudden loss of altitude. This feature, also common to the Cessna and Stinson 150, is a particularly appropriate safety feature for the Bellanca. As previously mentioned, the Cruisair's flap handle is well out of sight under the instrument panel. This handle has a trigger-like grip at the top which, when pulled toward the pilot, permits flaps to snap back into the wing. If the newcomer, on his first landing approach with half-flaps, should inadvertently retract them while attempting to lower more flap, the Cruisair will pick up a little speed but will not lose altitude.

Landings

With a 2,100-lb. gross weight, the Bellanca floats quite a distance after you break the glide. Even on a 70-mph. approach you still get a lot of float. Best policy is to undershoot the landing point by at least 100 feet. After a few landings, approach speed can be cut down and some of the float will be lost. Wide landing gear minimizes danger of ground looping. With a passenger in the back seat, you can apply firm brake pressure without lifting the tail.

Good aileron control at slow speeds helps make landing the Bellanca a simple job. You can literally fly right through the stall during the landing. If a wing starts down, opposite aileron will pick it up. Since the Cruisair is comparatively light for its size, gusts kick you around quite a bit when close to the ground. Good slow flight characteristics, however, should enable even the not-too-experienced pilot to handle the Cruisair safely.

One Cruisair flight characteristic that may give the newcomer some trouble is excessive torque during take-off run. When the throttle is opened rapidly for take-off, the 150-hp. Franklin takes over and literally boots you down the runway. Plenty of right rudder is required at this point to keep the nose headed straight. Best policy is either to anticipate this yaw to the left or to open the throttle gradually if field conditions permit. Gradually easing on power gives you time to see what the nose is doing. It also enables you to pick up momentum with the tail down. By the time you have enough speed to lift the tail, a moderate amount of rudder pressure will take care of torque.

Critically Speaking

The Bellanca's fine performance is the principal reason a lot of people don't mind paying a minimum of $6,520 for a fabric-covered design. But while the Cruisair's zip and go leaves nothing to be desired, there is room for improvement in other departments. A good muffler is badly needed and the cabin is not well soundproofed. While the exterior is sleek and good-looking the cabin interior could stand more finishing. The instrument panel is plain vanilla. This, plus quilt-like upholstery and protruding corners leaves much to be desired at the Bellanca's price. It doesn't even have an ash tray.

Seats are comfortable enough and the front will accommodate two long-legged people. One person will find the back seat very comfortable; two large men will find it crowded.

Operating the gear and flaps could be simpler but here again Bellanca is keeping down weight and cost. They probably feel that the Cruisair is strictly a cross-country airplane. Since you only crank the gear up and down once every three hours or so, speed gained and money saved should be worth the trouble. For airport flying the rather slim landing gear may be left down with very little loss in speed.

It will be interesting to see how this high-performing airplane fares on a now-critical four-place market. Nearest competitors at this writing are the fabric-covered 150-hp. Stinson Voyager and the all-metal 185-hp. Navion. Both feature better sound-proofing, more "finished" cockpit fittings, and each matches the Bellanca on safe flight characteristics. The Cruisair, on the other hand, should take them on at top speed or cruise and rate of climb and show its heels. If it's performance you want, the Bellanca may be your airplane. ★ ★ ★

For the Record:

Lightplane performance authenticated in recent articles by Associate Editor Joe James for SOUTHERN FLIGHT readers includes the following:

ROCKET 185. Powered by 185-hp. Lycoming; seats two persons. Cruising speed at 2,000 ft. was 155 mph. indicated. Approaches at 90; lands at 55 mph. Useful load 890 lbs., gross weight 2,240 lbs. Last quoted price, $5,000.

CESSNA 140. Powered by 85 hp. Continental; seats two. Cruising speed at 2,000 ft. 112 mph. indicated; ground speed clocked at 110 mph. Approaches at 65 mph.; lands at 45 mph. Useful load 560 lbs., gross weight 1,450 lbs. Price, $3,295.

CULVER V. Powered by 85 hp. Continental, seats two. Cruising speed at 2,000 ft. 120 mph. indicated. Approaches at 80 mph.; lands at 55-60 mph. Useful load 560, gross weight 1,600 lbs. Price, $4,061.

SWIFT 125. Powered by 125 hp. Continental, seats two. Cruises at 145 mph. indicated at 2,000 ft.; ground speed clocked at 147.5. Approaches at 80 mph.; lands at 55 mph. Rate of climb 875 fpm. Gross weight, 1,710 lbs. Price, $5,509.

SEABEE. Powered by 215 hp. Franklin, seats four. Ground speed clocked at 118 mph. with three passengers, full tanks. Gross load, 3,000 lbs. Price $6,000.

FUNK. Powered by 85 hp. Continental, seats two. Cruising speed 105 mph. indicated at 2,000 feet. Approaches at 60 mph., lands at 40. Pay load, 480 lbs.; gross weight, 1,350 lbs. Price $3,695.

NAVION. Powered by 185-hp. Continental, seats four. Ground speed averaged 145 mph.; true air speed at all altitudes 145 mph.. Approaches at 75 mph., lands at 50 mph. Landing ro'l, 586 ft.; take-off run 413 ft. Gross weight, 2,750 lbs., useful load 1,090. Price, $7,750.

STINSON 150. Powered by 150-hp. Franklin, seats four. Ground speed averaged 139 mph. on two-way cross country; true air speed averaged 120 mph. at all altitudes. Approaches at 75 mph.; lands at 52 mph. Gross weight, 2,230 lbs.; pay load 1,006 lbs. Price, $5,700.

LUSCOMBE 85. Powered by 85 hp. Continental; seats two. Ground speed averaged 110 mph., indicated air speed 112 at 2,000 ft. Approaches at 70 mph.; lands at 53 mph. Gross load 1,400 lbs., useful load, 550 lbs. Price. $3,595.

FOREIGN PERFORMER

ONE of Britain's most amazing lightplanes is the 3-place, 140-hp. Miles Messenger, according to the British publication, "Aeronautics." A writer who flew it for the basis of an article, describing how the factory's chief test pilot checked him out, had this to say:

"Wind at the time was 15 to 20 mph., but even so it is rather frightening to have the airplane parked facing a line of tall trees a mere 100 yards away, then see the throttle opened. What is more, we cleared the trees by a good 50 feet. The landing demonstration was equally incredible. One can appreciate how short the landing run really is when one considers that the airplane may be brought to rest (in normal wind conditions) in six times its own length!"

About his air work the writer went on: "Behavior of the Messenger near the stall is absolutely incredible. Even at 25 mph. indicated air speed all controls are still sensitive and give full control. I found it (stall speed) near 24 mph."

The plywood low-wing Messenger, with triple fins and rudders, fixed landing gear and the patented Miles auxiliary airfoil flap, has a 36-ft. 2-in. span, 24-ft. length, 191 sq. ft. of wing area, 2,400-lb. maximum gross weight, 110-mph. cruising speed, 1,100-fpm. initial rate of climb, 250-mile range. It is a civil version of the military M-28. ★ ★ ★

Douglas' five-place experimental personal plane emphasizes wide tricycle landing gear and squat appearance. Two 200-hp. engines, mounted behind the passenger compartment, drive single eight-foot pusher propeller (left), permitting either engine to be cut in or out without affecting flight control. Note large tail skid.
—(Douglas Photo.)

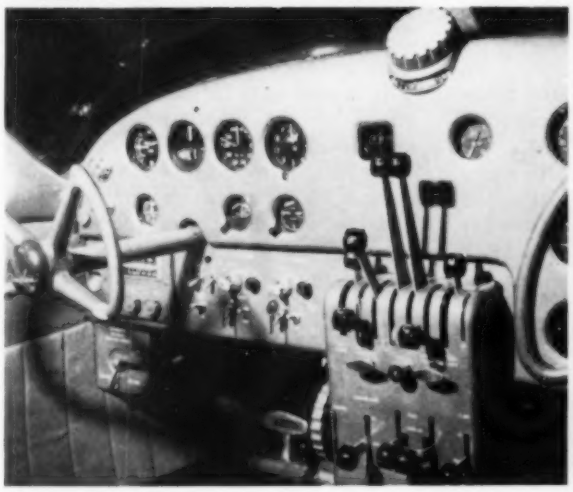
Douglas Cloudster

THE Cloudster, a five-place experimental commercial airplane whose twin engines drive a single pusher propeller located behind the rudder, was scheduled at presstime to make first test flights at Douglas Aircraft Company's Santa Monica plant. Production plans will not be announced until exhaustive tests have been completed. Company officials refrained from estimating probable selling prices, but by present pricing standards it probably would be in the $25,000-$30,000 bracket.

Designed for use in charter service or as an executive transport, the all-metal low-wing is said to carry five persons plus 250 pounds of baggage a distance of 950 miles at 200 mph. Utilizing the center-line thrust principle incorporated in the Army's record-breaking XB-42 Mixmaster, the Cloudster is presently powered by two 200-hp. engines mounted behind the passenger compartment. Plans are to install 250-hp. Continental engines when these become available.

(Continued on page 48)

Designed for use in executive transport or charter work, Cloudster has attractively-finished interior and is entered through automobile-type door (left). Transport-type instrument panel (lower left) has twin ignition switches just below flight instruments. Control pedestal resembles that of twin Beech but has only one pitch control. Viewed from above (lower right), Cloudster's unique fuselage design is clearly revealed. Note forward position of passenger compartment and wide engine housing just behind it.



ORGANIZE--OR TAKE IT!

With a new Congress and 44 state legislatures convening, 1947 will be an eventful year for aviation. Operators must organize to meet the challenge. Their opportunity lies in a vigorous revival of NATA.

By
HARRY MEIXELL
Executive Director,
National Aviation Trades
Association, Inc.

TO a very large extent, the future of aviation—certainly that phase of it usually called "private flying"—lies in the hands of those engaged in aviation trades. Convincing evidence of the justification for and soundness of this assertion can readily be found in examining the following basic activities which are involved in aviation trades, and by appraising their relationship to and influence upon public opinion:

1. Private ownership and operation of airports; operation of public airports under lease.
2. Wholesale and retail distribution of aircraft, parts and accessories, fuels, etc.
3. Repair, maintenance, overhauling and general servicing of aircraft, etc
4. Instruction in flying; training in aircraft, repair and maintenance, etc.
5. Transportation of persons or property for hire as so-called "charter" or "air taxi" operators.
6. Specialized aviation trades, such as seed planting, crop dusting, aerial photography, etc.

Since the fundamental and indispensable requirements of aviation are the relatively few areas on the surface of the earth known as "airports," where flying must begin and end, and where aviation trades serve their patrons, it is obvious that those engaged therein are in far better positions than anyone else to promote public knowledge of, interest in and support for aviation. Aviation trades are indeed the vanguard of aviation.

44 Legislatures Meeting in '47

This being so, if they properly and fully organize themselves into strong associations in their respective states and then establish a federation of such state associations on a national basis, they can be powerful forces for warding off those things which will prove harmful or hampering, not alone to their own immediate interests, but also to those of aviation and air transportation generally. By the same token, they can achieve worthwhile and beneficial objectives at local, statewide and national levels.

Steps along such lines are of the utmost importance at this time because immediately ahead are many problems whose proper solution is vitally important for aviation trades. First and foremost are those which are bound to arise at state levels this year, when the lawmakers of 44 states (all but Kentucky, Louisiana, Mississippi and Virginia) will hold regular sessions of their legislatures. In anticipation of these sessions, various authoritative national organizations such as the National Association of State Aviation Officials, the Council of State Governments, the National Institute of Municipal Law Officers, the National Association of Railroad & Utilities Commissioners, and in certain cases, the Civil Aeronautics Administration and the Federal State Division of the Department of Justice have formulated and are advocating the general adoption of proposals for uniform state laws dealing with the following subjects of vital concern to aviation and air transportation:

1. State Aeronautics Commission or Department Act
2. Municipal Airports Act
3. State Channeling of Federal Airport Funds Act
4. State Airport Zoning Act
5. Airport Condemnation Amendment
6. Uniform State Air Commerce Act

Details regarding these proposals, with identification of the particular sponsors advocating each of them, were presented in State Affairs Bulletin No. 1, December 4, 1946, distributed by NATA. Copies can be obtained from NATA Headquarters, 1365 Connecticut Avenue, Washington 6, D. C.

Just about the time the state legislatures will begin their activities, the 80th Congress of the United States has convened. Undoubtedly during 1947 and 1948, when the national lawmakers hold their sessions, they too will be called upon to consider and act upon proposals for laws which will profoundly affect aviation and air transportation generally and the various particular types of aviation trades.

While problems arising from possible new legislation are in the offing, aviation trades have to cope with many old problems arising from the rules and regulations, or the proposed rules and regulations, of Federal administrative bodies charged with the responsibility of administering and enforcing existing laws. Among them are Federal aid for airports, GI Training, safety and economic regulations under the Civil Aeronautics Act of 1938.

Certainly this is the time when the thousands of companies, partnerships and individual proprietorships engaged in aviation trades throughout the 48 states and the District of Columbia must unite and organize to confront common dangers and solve common problems.

Associations in 39 States

In view of these considerations and developments, it is significant that there are now more than 39 states in which those engaged in the various particular aviation trades have established or are creating state associations designed to unite and co-ordinate the efforts of their members in activities to ward off common dangers, solve common problems and obtain common benefits.

As evidence of the seriousness of these movements and of the determination of those behind them to achieve results, it should be noted that the members are insisting upon well-conceived and executed work programs, adequate budgets for financing the work programs, and sufficient annual dues to meet anticipated expenses. In some instances permanent headquarters with a paid staff for administering the affairs of the association have been established.

Of equal importance, in most instances, the activities determined upon and the work programs adopted contemplate not only the greatest possible membership from the aviation trades of the states, but proper geographic distribution of voting powers and responsibilities among the various types of aviation trades. To these ends, the constitutions and by-laws of the state associations usually provide for regional

(Continued on page 24)

Boeing's Liaison Design

Unusual Boeing design features include underslung tail surfaces; full-span flaps which do not retract, serving as part of wing area and which can be raised to 10 degrees negative; pod-type gondola fuselage; main landing wheels which can be rotated inward for loading aboard a truck. Engine is 125-hp. Lycoming.
—(Boeing Photos.)

DEVELOPMENT by Boeing Airplane Company, Wichita, Kansas, of an unconventional liaison plane that can take off over a 50-ft. obstacle in less than 600 ft., and land over a similar obstacle in an even shorter distance at 32 mph. has been announced by the Army Air Forces. It has been described as having commercial possibilities, although no plans for civilian models have been mentioned.

All-metal and designated L-15A, it has been ordered for use by the Army Ground Forces primarily to spot and direct artillery fire.

Most unusual features of the new craft are a transparent gondola fuselage, housing power plant, pilot and observer, which hangs below the level of all flight surfaces, giving the pilot and observer full visibility in all directions; "upside down" tail surfaces supported by a single slender boom; and "reverse tricycle" landing gear.

The L-15A is powered with a 125-hp. Lycoming engine, and will fly at speeds ranging from near 32 mph. to a maximum of 112 mph. Cruising speed is 101 mph.; initial rate of climb 628 ft. per min., and service ceiling 16,400 ft. With 21 gals. of fuel, the L-15A has a two and one-half hour cruising range, but this can be increased to five and one-half hours by the addition of an external tank.

The new Boeing stresses versatility both in the air and in ground characteristics. The rear seat in the gondola can be faced either forward or aft, or removed completely to make room for cameras. The full span flaps may be adjusted to 10 degrees up and 40 degrees down, and are designed to act differentially with spoiler-type ailerons.

On the ground, the entire airplane may be quickly disassembled and loaded on a standard two and one-half ton Army truck. Wings, tail-surfaces and tail-boom are readily removable, while landing-gear wheels may be rotated inward to decrease width for loading.

The L-15A can be equipped with skis or floats in place of wheels. The Army states that the new ship can be towed glider fashion at speeds up to 165 mph. with its propeller in place, and that the engine can be started prior to release from the tow plane.

SPECIFICATIONS BOEING L-15A

Length	26 ft., 1.2 in.
Span	40 ft.
Height	8 ft., 8.5 in.
Gross Weight	2,050 lbs.
Useful Load	541 lbs.
Power Plant (Lycoming)	125 hp.
Top Speed	112 mph.
Cruising Speed	101 mph.
Landing Speed	32 mph.
*Take-Off	600 ft.
*Landing	517 ft.
Rate of Climb	628 fpm.
Service Ceiling	16,400 ft.
Range	2½ hrs.

*Over 50-ft. obstacle.

Second radical liaison design announced in recent months by the AAF, the Boeing L-15A is smaller than the new 3-place Convair L-13 (SOUTHERN FLIGHT, November, 1946). Here are comparative figures on the Convair: Length, 31 ft. 9 in.; span, 40 ft. 5.5 in.; gross weight, 2,900 lbs.; useful load, 1,012 lbs.; power plant (Franklin), 245 hp.; top speed, 115 mph.; cruising speed, 92 mph.; landing speed, 43.5 mph.; take-off over 50-ft. obstacle, 470 ft.; landing distance over 50-ft. obstacle, 482 ft.; rate of climb not given; service ceiling, 15,000 ft.; range, 4 hrs. ★ ★ ★

Basic Instruments And Their Function

III.—Turn and Bank Indicator

An expert analyzes basic flight instruments, one at a time, and discusses their function and proper use in simple terms.

By BERNARD I. DIAMOND
School Administrator
Eclipse-Pioneer Division
Bendix Aviation Corporation

THE turn and bank indicator is one of the basic units employed in instrument flight training and may be classified as a navigational instrument. It is designed to indicate to the pilot when the airplane turns; if the aircraft is flying level; and if the aircraft is negotiating a turn without slip or skid. As an extension of the original purpose, it is often set up so that it indicates to the pilot the rate of turning of the aircraft (Fig. 1).

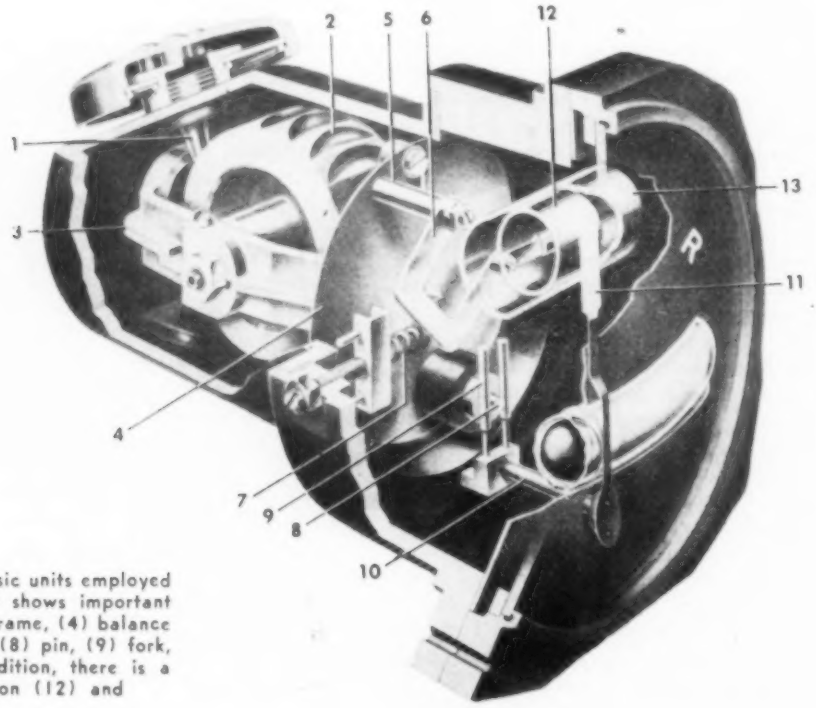
The instrument consists of two units combined in one instrument case. The bank indicator consists of an agate ball mounted in a curved glass tube, filled with a liquid for damping the movement of the ball. This ball is acted on by two forces—centrifugal force and gravity. In effect it acts like a pendulum. It is subject to the laws of pendulums except as it is affected by the damping liquid. The turn indication is derived from a simple gyroscopic assembly. Under the influence of a turn, a force couple is caused to act on the spin axis of a small gyroscope. The movement of the gyroscope is taken as an indication of the turning of the airplane about its vertical axis.

The gyroscope assembly (Fig. 2) consists of a small brass rotor, approximately 2 inches in diameter and weighing approximately 6 ounces. The rim of the rotor has a series of buckets or cups milled in it. The gyro rotor is so mounted in the case that a jet of air is directed against the buckets, producing rotation of the rotor at rate of approximately 8,000 rpm. Air to spin the rotor is induced by connecting the case of the instrument to a vacuum pump or venturi tube. Air under atmospheric pressure then flows into the case through an air filter and thence through a jet which directs the air flow to act on the buckets. (Air always flows from regions of high pressure to regions of low pressure.)

The normal "at rest" position of the spin axis of the rotor is parallel to the floor of the ship and at right angles to the longitudinal axis of the ship (Fig. 3).

Under the influence of a turn about the vertical axis, a force couple is caused to act on the spin axis of the rotor. This causes precession of the spin axis. By precession we mean the motion of a spin axis at right angles (90°) to an applied force couple (Fig. 3).

The amount of precession depends on several factors: (1) The rate of turning of the airplane—the faster the rate of turn, the greater the preces-



Figs. 1 and 2

The turn and bank indicator (above) is one of the basic units employed in instrument flight. Cutaway drawing at the right shows important parts. (1) air intake jet, (2) gyro wheel, (3) gimbal frame, (4) balance plate, (5) lever, (6) U-arm, (7) centralizing spring, (8) pin, (9) fork, (10) handstaff assembly, and (11) pointer. In addition, there is a piston and cylinder assembly comprised of piston (12) and cylinder (13).

sion; (2) the rate of rotation of the rotor—the faster the wheel spins the greater the amount of precession for any given rate of turning of the aircraft, and (3) the controlling of the tension of a small coil spring which is attached to the gyro assembly frame. This small coil spring is known as the sensitivity spring. Besides serving the purpose of a calibrating spring, it also serves the purpose of returning the gyro assembly and pointer to a centered zero reading when turning ceases.

Another important part of the turn indicator is the damping control which consists of a small piston and cylinder with a controlled restriction in the top of the cylinder. When the gyro and frame assembly precess under the influence of a turn, the small piston is caused to move. Movement of the piston either pushes air out of or pulls air into the restriction. The net result is to "damp" the movement of the gyro assembly. Without the damping unit, the gyro frame assembly would rock back and forth continuously and the resulting indication given by the instrument would be worthless to the pilot. The pointer of the instrument is activated by a small stud attached to the frame of the gyro assembly.

Interpretation and Use (Fig. 4)

Bank Indicator. This unit serves its most useful purpose in telling the pilot if he is making a correctly banked turn. The ball, under the influence of the forces developed in a correctly banked turn, remains in the center of the glass tube. If a turn is performed with too much bank, the ball goes to the low side indicating a slipping turn. If an insufficiently banked turn is being made, the ball goes to the high side indicating a skidding turn. If the aircraft is not turning, the ball indicates whether or not the aircraft is flying laterally level.

Turn Indicator. This unit may serve two purposes, as indicated previously. If the instrument is to be used for indicating rate of turning, the situation is a more exacting one for pilot and mechanic alike. The pilot must time his turn with a stop watch. The table which follows indicates the calibrations of two types of turn indicators:

Rate of Turn	Inches of Pointer Deflection A	B
36 degrees per minute	1/16"	1/32"
180 degrees per minute	5/16"	5/32"
360 degrees per minute	1/2"	5/16"
1,080 degrees per minute	1"	11/16"

Calibration under A is the standard one most used in commercial and private craft. The less sensitive calibration under B is sometimes used by military agencies and transport operators. 3° per second (180° per minute) is considered as the "standard" rate of turn.

In the actual use of a turn indicator for performing timed turns, one of the most important factors is the technique exercised by the pilot in starting and stopping the turn. If the turn is not entered into and terminated correctly the impression given the pilot is that the instrument is not correctly calibrated. The technique is acquired only with practice and experience.

When a turn indicator is being operated by a venturi it is necessary that the pilot maintain a given flight level and air speed when making timed turns, otherwise the amount of vacuum being applied to the instrument will vary and the result will be an inaccurate indication. The turns will be "short" or "long."

Installation

In addition to the indicator itself, the following additional units are essential to a proper installation: A regulator valve and a test fitting for a suction gauge.

The following general practices should be observed in performing the service of the turn and bank indicator installation:

(1) The line connecting the venturi or vacuum pump to the instrument should be clean, free of burrs, have a minimum of bends, and not leak. From time to time, the line should be blown out. Disconnect *all* instruments before blowing out the line. In dual cockpit aircraft, a "balance" line should be installed between the two instruments to insure that the same vacuum (2" Hg.) will be acting on both units.

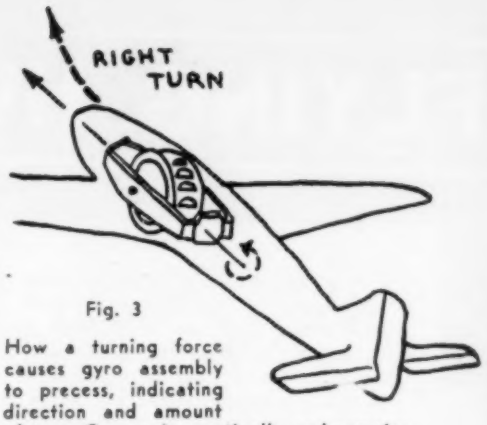


Fig. 3

How a turning force causes gyro assembly to precess, indicating direction and amount of turn. Gyro spins vertically and remains fixed in straight flight. When the aircraft turns (dotted arrow), the gyro assembly precesses (arrow inside fuselage) causing the hand to indicate a turn.

(2) The turn and bank installation has a small test fitting in the line on or near the instrument case. This serves the purpose of a test outlet for a vacuum check. Be sure this fitting is capped when the vacuum test is completed.

(3) If a venturi is used, vacuum test can only be made in normal flight attitudes, altitudes and speeds. Be certain the plane is flying level and near cruising speed when making the vacuum test.

(4) The venturi used must be kept clean. Particular attention should be paid to the annular ring located in the throat of the venturi. The venturi must also be parallel to the longitudinal axis of the aircraft.

(5) When installing the indicator on the instrument panel, be sure that the ball is centered (in the "cage") when the ship is level.

(6) When testing a turn indicator for sensitivity, be sure to take into account compass errors (deviation) if the amount of the turn made is being checked by the readings of a magnetic compass.

(Continued on page 48)

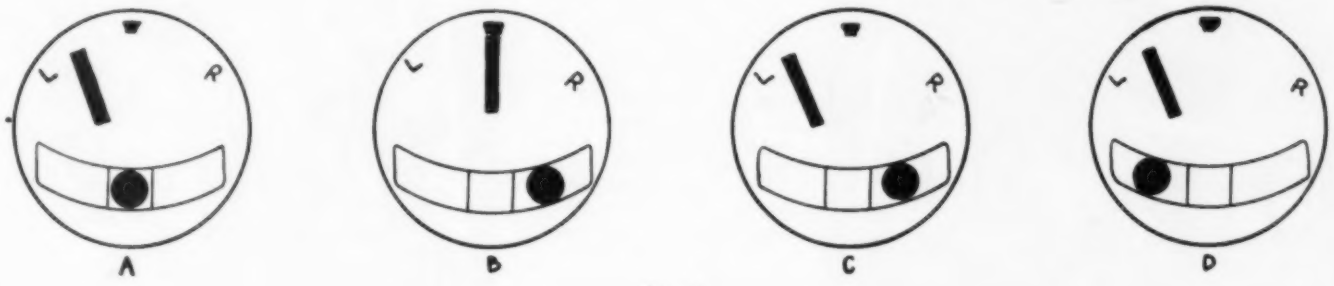


Fig. 4

One of the most accurate flight instruments, the turn and bank indicator not only shows direction and rate of turn but also whether the turn is properly executed. In a slipping turn the ball goes to the low side; in a skidding turn it goes to the high side. (A) left turn, correctly banked; (B) straight flight, right wing low; (C) left turn with skid; (D) left turn with slip.

FLYING HUNTERS

OCRACOKE ISLAND (top right) lies 30 miles off North Carolina's coast and has long been a near-inaccessible hideout for ducks and geese. Recently air-minded hunters discovered the island's great tidal flats make an excellent landing field. Now hunters from as far away as Pennsylvania climb into planes and land (right) at Ocracoke a few hours later. On one recent afternoon, five personal planes landed on the island's beaches. A charter service also flies hunters across Pamlico Sound from nearby Norfolk.

Hunters usually arrive late in the afternoon, spend the night at nearby lodges, and early next morning wade out to pillboxes in Pamlico Sound (lower right). Flying above thick patches of geese (below), homeward bound hunters usually have only one complaint — new Federal regulations permit them to take home only one day's bag. As a result, Ocracoke homes were well stocked this winter with left over geese and ducks.

Air - minded sportsmen from half - dozen states swap tall stories (left) at the Beachcombers' Club, a rustic lodge for men only at Ocracoke, N. C. At right, a guide hangs up a portion of the day's bag. New Federal regulations, which permit hunter to have only two geese in possession, complicated the cook's problems.

(Photos by Johnny Hemmer.)

Lean Over —And Fly Right

by A. H. Knouff

Smooth co-ordination is one mark of a safe and skillful pilot. Let this help you keep that ball in the middle.

YOU began to co-ordinate before you were born. Co-ordination simply means doing several things at the proper time and in the proper amount in relation to each other. The dictionary calls it "functioning in harmony." It takes a lot of unconscious co-ordination just to live, but you have also learned many complicated processes that required conscious co-ordination.

When you first began to crawl, you had to learn how to work your arms and legs together to propel yourself toward some attractive object, probably your mother's favorite vase. Learning to walk was a much greater problem of co-ordination than learning to fly, but it did not occur to anyone to tell you so. Your first attempts to write were probably more awkward than your first experiments with the controls of an airplane. The pencil had no inherent stability to help you guide it. The airplane has. When you learned to drive a car, hammer a nail, ride a horse, play a piano, bat a tennis ball, dance, or play hopskotch, you had to master the co-ordination required by that particular activity. How well you did it might depend a little on qualities you were born with, but the important factor was how much you wanted to do it, how hard you were willing to work and how long you would stick to it in the face of discouragement.

Doing What Comes Naturally

Much of the co-ordination required in flying comes naturally because you have already acquired it to some extent. When you learned to walk, corners were negotiated by grabbing the nearest object to steady yourself while you changed heading for a new destination. Eventually you learned that by leaning a little bit in the direction you wanted to go, you could change direction without toppling over. By the time you learned to drive a car, it seemed instinctive to lean toward the inside of a turn. You understood why highway curves were banked and were pleased because you could go around them faster without feeling that you might slide out of the automobile or that it might skid off the road.

Banking an airplane means the same thing as banking an automobile. The only difference is that the motor car driver cannot choose how steeply he wants to bank. He cannot turn sharper or at greater speed than the highway engineers planned, because *rate-of-turn* depends on the degree of bank—and you can't change the bank of a concrete highway. When the sharpness of the curve, the degree of bank and your speed are properly related, your backbone will be perpendicular to the seat with no feeling of sliding or toppling over. If you feel yourself sliding or toppling over toward the outside of the curve, it means that you are going too fast or trying to turn too sharp for the amount of bank. If it were not for the friction of the tires on the pavement, your automobile would start *skidding* immediately. In an automobile you can avoid a skid only by reducing your speed. In an airplane you can avoid it by relaxing on the rudder (or applying outside rudder, if necessary) to widen the turn or by banking steeper, as well as by reducing your speed.

Although you have learned to lean in the direction you are turning when driving a car, running, or even walking, you are quite likely to lean the other way in an airplane. This seems to be due to an unconscious fear that you may bank too far and the airplane

will fall over on its back. Relax. An airplane is built to fly right-side-up and it will stay right-side-up in spite of anything you are likely to do. While it is true that "steep" turns close to the ground are dangerous, the danger does not lie solely in the steepness of the bank.

The first time you try to fly straight and level, you will make hundreds of turns without knowing it. Every time the nose wanders to the right or left and you push a rudder pedal to bring it back to the straight course, you are making a gentle turn. These turns are usually so slight and continue for such a short time that you seem to make them with rudder alone. If you continued turning longer, or made the turn sharper, you would become conscious of using both aileron and elevator, as well as rudder, to make the turn correctly. In other words you must co-ordinate the use of *all* the controls.

Lean with the Turn

The easiest way to turn an airplane is simply to lean in the direction you want to go. Since you can't lean both ways at once, this will overcome your inclination to lean the wrong way. When you lean toward the turn, you will pull the stick (or wheel) with you —which makes the airplane bank in the proper direction. At the same time, your weight will shift toward the leg on the side toward which you are banking and you can't help pushing on the rudder pedal a little. This is exactly what you want to do. The airplane will lean with you. The centrifugal force will push your seat and that of the airplane straight against each other, and you will not feel you are leaning at all.

When the airplane is banked as steeply and turning as sharply as you want, just relax. If the airplane is rigged properly and the air is smooth, it will stay in the turn even if you take your feet completely off the rudder pedals. If you let go of the aileron and elevator control it may dive a little and eventually return to level flight.

Remember that pressure on a control produces movement of the airplane around one of its axes—the sharpness or speed of the movement depending on how hard you push the control—and you must do something to stop the movement. Usually all you have to do is neutralize the controls. This is true in most turns. When you have established the degree of bank and turn you want, you must neutralize rudder and aileron. This does not mean that you must forcibly return the stick to the center or hold the rudder pedals in a side-by-side position. You neutralize the *pressure* of the controls—not the position.

Sometimes, in a turn, it is necessary to bring the stick back beyond neutral to stop increasing the bank. This is most noticeable in very gentle turns. Since the outside wing is moving in a larger circle, it is moving faster than the inside wing, and therefore has more lift. This explains why you did not have to use ailerons to make the small turns necessary to fly the airplane straight and level. This effect is sometimes called the "overbanking tendency." It becomes less as the bank increases, so that there is no danger of the airplane turning over of its own accord. In normal turns, you may forget about it.

Skidding or Slipping?

If you are turning correctly, you can sit straight in relation to the airplane—just as though it were flying level. If you are *skidding*, you will feel the same tendency to slide toward the outside of the turn as you do in an automobile. If you take your feet off the rudder pedals, skidding will usually stop because it was caused by continuing to hold pressure on the rudder after your turn was established. If the airplane stops turning when you take your feet off the rudder, you were probably leaning away from the turn and unconsciously pulling the aileron control with you.

If you feel a tendency to slide toward the inside of the turn, the airplane is probably *slipping*. It may mean that you have overdone the business of relaxing on the rudder. You have not really relaxed, but merely transferred the pressure to the opposite rudder. Taking your feet off the rudder pedals will expose this error by making the airplane bank steeper and turn sharper. If the turn becomes sharper (and the bank steeper) than you want, correct it by applying both rudder and aileron toward the outside of the turn.

Skidding is the most common and most dangerous error. It may result in an accidental *cross-control* spin about which you will hear more as your flying continues. Slipping is not dangerous, except in rather unusual circumstances, and is often useful as a means of losing altitude when you have approached too high for a landing.

If you have a tendency to skid in turns, I suggest you follow this rule:

Start turns with aileron. Stop turns with rudder.

Following this rule literally may cause you to slip a little at first, but, as I have pointed out, this is safer than skidding and you will soon learn how much rudder is needed in entering the turn, and how much aileron is needed in rolling out, to avoid slipping.

Back Pressure Is Important

I have mentioned the elevator several times without telling you how it is co-ordinated with rudder and aileron to make a good turn. In gentle or moderate turns, you may use the elevator correctly without noticing it. In any turn, the nose of the airplane will drop a little. If you don't do something about it, the airplane will lose altitude. The thing to do is apply enough back pressure to keep the nose up. This effect is hardly noticeable in gentle turns, but when the bank is greater than 45 degrees the elevator becomes the most important control.

Since the wing is tilted in a turn, its lift is not pulling straight against gravity. Therefore, it takes more lift to support the weight of the airplane. Pulling back on the elevator control increases the angle at which the wing is striking the air and so increases the lift. The steeper the airplane is banked, the harder you must pull back on the elevator control to get additional lift and keep from losing altitude.

How steep you can bank is limited by the power available. You will find that in normal turns you can maintain altitude with the throttle at cruising power, but as you sharpen the turn—and increase the bank—you reach a point where you have to push the throttle open. When you can't open the throttle any more, you can't bank any more. Even the most powerful airplane cannot hold altitude in an absolutely vertical bank.

The most common mistake in a steep turn is slipping. This is usually caused by trying to hold up the nose by holding rudder on the high side of the turn. The correct way is to relax on the rudder and increase the back pressure on the elevator control. This increases the pressure on your seat and may give you an unpleasant feeling due to centrifugal force pulling downward on your muscles. If the airplane continues to lose altitude, you are trying to turn sharper than is possible and should reduce your bank by rolling out of the turn with both rudder and aileron.

I have mentioned the increased pressure on the seat of your pants and pull on your muscles due to centrifugal force. All parts of the airplane, as well as everything in it, are affected by this pull. The effect of this force is to increase the load which the wings must support. The ratio of this load to the normal load of the airplane is called the load factor. In a turn requiring a 60-degree bank this load is

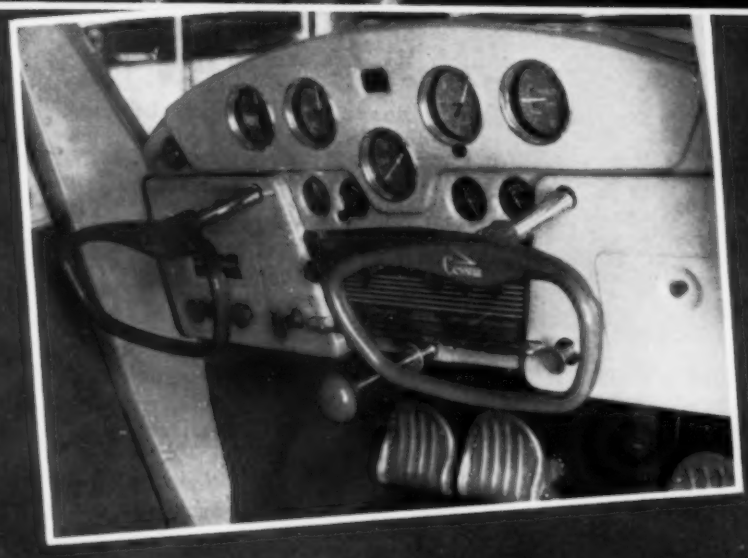
(Continued on page 48)

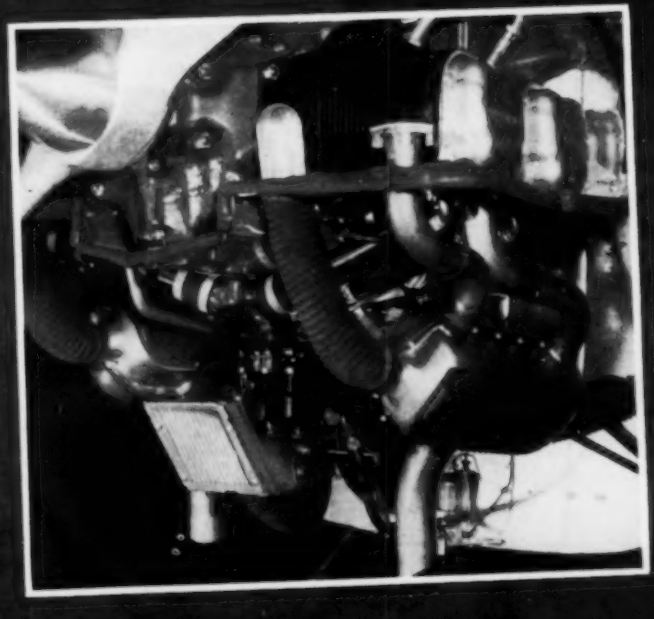
Cessnas for '47

WITH an eye to pilot comfort, Cessna's new models for 1947 feature design improvements combined to provide a quieter, more comfortable and attractive cabin. Outstanding single improvement over previous 140's and 120's is in cabin sound level. Engine mufflers, better soundproofing, and airline-type cabin air vents reduce sound level to a point where pilot and passenger may converse in normal tones.

Appearance-wise, both of Cessna's personal plane models have revamped instrument panels, new control wheels and re-fitted interiors. The 140 is equipped with rubber air foam cushions mounted on no-sag springs and covered with leather-trimmed upholstery. The cabin is fitted in two-tone pastel tones. Although the 120

(Continued on page 47)





Scene at Lost Valley Dude Ranch (top right) emphasizes new Cessna cowl design while close-up of instrument panel (left center) reveals shortened control column, new wheel design and revamped shock-mounted panel. Roomier cabin (lower left) has reduced noise level by improved soundproofing and engine mufflers (lower right).

ORGANIZE—Or Take It!

(Continued from page 16)

and industry vice presidents or for the creation of appropriate special committees made up of these members engaged in or especially well-versed in the subjects entrusted to them for review and recommendations.

NATA Now Federation of State Chapters

In view of these nationwide movements, the recent reorganization of NATA should prove timely and highly beneficial. At their meetings in Cleveland, Ohio, November 20-21, 1946, representatives of over 30 states, who had been direct members of NATA as previously organized, voted unanimously to make the national body a federation of state aviation trades associations. At the same time, provision was made for direct individual membership from states in which there are no NATA state chapters.

Under the work program which was adopted, national headquarters, at the direction and with the help of the officers and other members of the executive committee, will assist NATA state chapters in conducting their activities and rendering services to their members at state levels. At the national level, NATA, through its headquarters in Washington, D. C., will undertake to protect and advance the interests of aviation trades with respect to Federal laws, the rules and regulations of Federal administrative bodies, and in other respects conduct activities beneficial for members.

Such services at the national level are of the utmost importance at this time because the 80th Congress will undoubtedly be called upon to consider and act upon many proposals for legislation which will have a vital bearing upon aviation and air transportation generally, and upon the particular aviation trades in which the members of NATA and its state chapters are engaged. In this connection, it is obvious that reorganized NATA through its state chapters can henceforth more quickly and effectively obtain grass roots understanding of and backing for its positions relative to proposals for Federal aviation legislation and administrative rules and regulations based on and derived from aviation laws.

A little reflection will show clearly that the state aviation trades associations now in existence, or in process of establishment, will not only be active in advancing and protecting the interests of those immediately engaged in aviation trades, but will also be of great value to those who sell commodities or render services to fixed-base operators, such as the manufacturers of aircraft parts, accessories, etc.; the producers of gasoline and oils; the manufacturers of equipment for airports and airways; machinery and equipment for repairing and maintaining aircraft, etc.; those engaged in aviation insurance; finance companies and banks engaged in time-sales financing, and many others to whom the welfare and the growth and expansion of the various aviation trades are indispensable.

In consequence, all state aviation trades associations merit the active and helpful backing of such beneficiaries in their efforts. These should be manifested by encouragement to their distributors, dealers, offices, agents or other representatives in the states in which they do business to become members of such associations and to support them as liberally as possible financially, and actively participate in their work.

Those directly engaged in aviation trades are indeed the vanguard of aviation, fighting its battles out on the firing line. Their ability to win victories and gain new ground for aviation and air transportation are directly dependent not only upon their own wisdom, courage and aggressiveness, but also upon the backing of all of those other aviation interests which stand to win or lose by the success or failure of the vanguard. ★ ★ ★

39 States Have Trades Groups

THERE are 39 state aviation associations or groups and one in Washington, D. C., now functioning, of which 33 were represented at the reorganization meeting of the National Aviation Trades Association. Here's a list of state groups:

Region 1

Connecticut Aviation Trades Association
Delaware Aviation Trades Association
Maine Aviation Trades Association
Maryland Airport Operators Association
Massachusetts Aviation Trades Association
New Hampshire Aviation Trades Association
New Jersey Aviation Trades Association
State Association "Organization Committee"
Pennsylvania Aviation Trades Association
Rhode Island Aviation Trades Association
Vermont Aviation Trades Association
Virginia Aircraft Service Operators Association
West Virginia Operators Association
D. C. "Organization Committee"

Region 2

Air Service Operators of Alabama
Florida Aviation Trades Association
Georgia Aviation Trades Association
Mississippi Aircraft Dealers & Operators Association
North Carolina Aviation Trades Association
South Carolina Aviation Trades Association
Tennessee Flight Operators Association

Region 3

Illinois Airport Operators Association
Indiana Aircraft Trades Association
Kentucky Operators Association
Aviation Association of Michigan
Minnesota Aviation Trades Association
North Dakota Aviation Association
Ohio Aviation Trades Association
Wisconsin Aviation Trades Association

Region 4

Arkansas Aircraft Operators Association
Oklahoma Aviation Association

Region 5

State Association "Organization Committee"
Iowa Flight Operators Association
Kansas Operators Association
Missouri Aviation Operators' Association, Inc.
Nebraska Aviation Trades Association
South Dakota Operators Association

Region 6

California Aviation Trades Association

Region 7

Montana Aviation Base Operators Association
Washington State Aviation Association

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The Bonanza *had* to be a revolutionary plane to provide the utility demanded for business use. It *is* revolutionary, achieving a speed and payload with its 165 hp engine and controllable propeller that no other plane has ever achieved before with less than 330 hp! Yet for this business machine—capable of saving thousands of dollars per year in man hours and executive efficiency and of making substantial savings in travel expense—the cost is just $7,345 F. A. F. Wichita, Kansas.

Production for early 1947 is already sold. Orders for delivery will be filled in the sequence received. There is a Beechcraft distributor near you, ready with additional facts and figures—and a Bonanza. Write for his name. Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

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SNYDER AIRCRAFT CORP.
Municipal Airport, Omaha, Neb.

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108 Grand Ave., Oklahoma City, Oklahoma

SUPPLY DIVISION, INC.
229 E. Madison Ave., Memphis, Tennessee

SERVAIR, INC. City Airport, Detroit, Mich.

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GLIDAIR FLYING COLORS

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VOL. VI, NO. 6 FEBRUARY, 1947

Modern AIRPORTS

A privately-owned and well-planned operation, University Airport is a Class II field located two miles west of Davis, Calif., and one mile from the University of California's College of Agriculture. Hangars, office building and pilot lounge are constructed of cement block and steel. All-weather runways are 150 feet wide; longest is 3,700 and shortest is 2,400 ft.

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First Year's Goal— 388 New Airports

Federal aid for 1947 airport construction and improvements is spread thin by CAA apportionments. Increases will be difficult in economy-minded Congress.

By KENDALL K. HOYT

THREE important announcements last month marked the launching of the long-awaited Federal Aid Airport program by the Civil Aeronautics Administration. The CAA listed 800 projects selected for development in the first year through funds already appropriated; prepared a further list of some 4,400 sites (including the above 800) for the first three years of the seven-year program, and revised regulations which set policies for apportionment of the funds, responsibilities of sponsors, and Federal administration.

A report is also expected on the related subject of levying fees on airway users to support the CAA system of airway aids. This is not CAA's idea; Congress requested it.

Federal Aid Funds for 1947 Airport Program

State	Number of Projects	Total U. S. Funds for 1947	Regular State Apportionment	Present Balance U. S. Funds
Alabama	0	$ 0	$ 591,213	$ 591,213
Arizona	9	384,926	625,320	240,394
Arkansas	17	512,806	492,437	0
California	33	902,966	1,598,582	695,616
Colorado	9	410,671	650,276	239,605
Connecticut	5	308,995	227,839	0
Delaware	1	52,050	43,172	0
Dist. of Columbia	0	0	77,955	77,955
Florida	15	504,895	522,151	17,256
Georgia	17	692,245	658,863	0
Idaho	45	991,281	477,266	0
Illinois	10	1,427,243	1,212,617	0
Indiana	15	562,601	582,951	20,350
Iowa	18	481,127	577,179	96,052
Kansas	35	1,260,660	620,260	0
Kentucky	13	606,023	534,101	0
Louisiana	14	586,369	523,220	0
Maine	6	262,292	269,947	7,655
Maryland	7	313,250	274,397	0
Massachusetts	15	707,678	551,120	0
Michigan	30	1,354,227	1,096,900	0
Minnesota	41	982,550	756,211	0
Mississippi	10	475,781	495,837	20,056
Missouri	32	1,360,289	789,721	0
Montana	46	797,322	797,733	411
Nebraska	9	163,902	538,393	374,491
Nevada	1	45,110	563,019	517,909
New Hampshire	13	162,795	103,834	0
New Jersey	7	618,182	527,839	0
New Mexico	10	748,883	667,735	0
New York	7	2,139,325	1,846,180	0
North Carolina	10	1,048,717	680,372	0
North Dakota	20	243,243	426,809	183,566
Ohio	5	696,040	1,030,860	334,820
Oklahoma	23	752,201	621,432	0
Oregon	32	609,826	610,420	594
Pennsylvania	27	1,888,786	1,388,042	0
Rhode Island	2	114,750	89,605	0
South Carolina	3	103,000	377,601	274,601
South Dakota	19	647,136	458,690	0
Tennessee	14	436,790	551,531	114,741
Texas	70	2,237,831	2,081,311	0
Utah	17	745,090	487,007	0
Vermont	5	103,800	89,867	0
Virginia	8	675,000	524,064	0
Washington	16	717,416	554,509	0
West Virginia	3	677,055	342,959	0
Wisconsin	25	1,676,560	696,774	0
Wyoming	3	177,630	516,629	338,999
Total	792	$33,367,315	$30,822,750	$4,146,284

Only 388 New Bases

The initial fund of forty-five million dollars in the five-hundred-million-dollar program has been largely apportioned among 800 airports in which the Federal share will be $33,899,265 and an additional $37,692,600 will be provided by state and local governments.

The Federal portion includes $26,676,466 from amounts apportioned among the states on the basis of population and area, $6,690,849 assigned to 30 states from a discretionary fund, and $531,950 from funds for Alaska, Hawaii, and Puerto Rico.

After deducting $2,250,000 for planning, research, and administration, a balance of $8,850,733 is left to make up any deficiencies in the 800 projects and possibly for some additional projects. Of this balance, $4,146,284 is earmarked among 30 states and the District of Columbia, being the unapportioned remainder of the sums set for these states by area-population formula, and the remaining $3,583,401 is discretionary.

Following is a breakdown of the 1947 program by types of airports:

	New Airports	Improvements
Class 1	232	82
Class 2	109	177
Class 3	44	153
Total	385	412

With three new seaplane bases, this adds up to 800 projects. Funds for existing and new Class 1 airports, suitable for private flying, total $6,539,795; for Class 2, for private flying and charter service, $9,968,958; and for Class 3, which can handle the smaller transport planes, $17,363,262.

Total airport costs cover $55,965,448 for the landing area program; $5,087,800 for buildings other than hangars; and $10,538,617 for land.

Funds are provided for every state except Alabama, on which an announcement is expected soon. There is no project yet for the District of Columbia or Puerto Rico.

4,432 Projects in 3 Years

Details for the program in the first three fiscal years ending June 30, 1949, have not been completed as this is written. It is understood that 4,432 project sites, including the 800 for the 1947 fiscal year, will be listed according to classes of fields recommended for these sites, including some large fields.

No airports above Class 3 were included in the 1947 program because the law requires submission of Class 4 and 5 projects to Congress before the start of each fiscal year. Legislation was delayed in the last session too late for such action before the 1947 fiscal year began. It is expected that CAA will ask an amendment to permit some big fields to start in the current year ending June 30 and will ask a deficiency appropriation of $50,000,000 for this purpose.

For future years, the fund outlook is uncertain. The annual budget for the fiscal year ending June 30, 1948, does not include an item for airports which CAA must request separately under its $500,000,000 authorization. It is expected that more than the $45,000,000 granted for fiscal year 1947 will be sought. But in an economy Congress, friends of aviation will have to make a vigorous case.

The easing of controls on construction other than veterans housing, toward possible complete decontrol by July, may prove a helpful factor in airport building. Some lowering of construction material prices is thought possible. The old theory of holding back public works for pump priming in the next depression has been losing ground in the present administration.

But the 1948 budget, on paper, is in balance only by a matter of $200,000,000 against which any substantial airport appropriation would be a significant item. As the Republicans prepare to cut even below the rock-bottom estimates of the budget, it is going to be very difficult indeed to get more than a token fund for next year.

Concessions to Big-City Interests

CAA's regulations for the airport program were carefully combed over after the protests at the recent hearings. Contentions that CAA was taking too much authority in its requirements for airport operation and was setting terms too stiff for municipalities to meet were recognized by CAA. Airport superintendents, called in from the various regions, all had a hand in the redraft. Except for the provisions of law which can be changed only by Congress, the rules were made as easy for municipalities as CAA thought possible.

On its formula for diminishing grants to large projects, however, CAA tried to hold firm. The White House then took the regulations for review. Big-city mayors had been in to protest. The final draft of the regulations includes substantial concessions to big-city interests. The original sliding-scale formula provided for 50 per cent federal grants on projects of total cost up to $2,000,000, diminishing at 5 per cent per additional $1,000,000 to zero for jobs costing $10,000,000 or more.

The new formula allows the Federal government to pay a 50 per cent share on projects of total cost up to $5,000,000, decreasing by 5 per cent with each extra million of cost up to $11,000,000. But the minimum Federal contribution, regardless of airport size, will be 20 per cent.

Thus the Federal grant can be as much as $2,800,000 on projects of $7,000,000 to $8,000,000. It may be seen that the proposed $50,000,000 will not be spread among nearly as many projects as under the old formula. Still, the smaller towns get a much better break than if the 50 per cent grant extended to all airports, however large, as the mayors requested.

In other respects, the regulations were shortened and simplified. Scores of minor changes were made, as CAA explained, to broaden and liberalize the provisions.

It was decided that municipalities accepting Federal aid may not make exclusive contracts on the sale of gasoline, repair services and charter operations. Landing fees, though frowned upon, are not prohibited. CAA now regards operation of airports to be the exclusive responsibility of the sponsors. ★ ★ ★

4th REGION PROJECTS LISTED

ONE hundred and fourteen projects in the 4th Region, composed of Arkansas, Louisiana, New Mexico, Oklahoma and Texas, are included in the National Airport Program for 1947, according to a schedule of tentative allocations of Federal funds announced by S. E. Travis, Jr., CAA Airports Branch Superintendent. The projects, with airport classification number in parenthesis, and amount of U. S. funds available to each, are as follows:

ARKANSAS: Fayetteville (3) $64,101, Russellville (2) $51,343, Helena-West Helena (3) $54,999, Mena (2) $23,225, Searcy (2) $19,457, Fordyce (2) $17,486, Batesville (2) $11,477, Harrison (2) $30,272, McGehee-Dermott (2) $22,254, West Memphis (2) $40,181, Malvern (2) $37,360, Crossett (2) $28,351, Monticello (2) $25,857, Magnolia (2) $28,270, Warren (1) $22,053, Gurdon (1) $24,488, Flippin (1) $11,632; total eighteen projects, $512,906.

LOUISIANA: Bogalusa (3) $53,850, Minden (3) $52,250, Bastrop (3) $67,412, Jennings (2) $24,325, Baton Rouge (2) $37,300, Lake Providence (2) $32,650, Rayne (1) $27,700, Ville Platte (2) $34,500; total, eight projects, $329,987.

NEW MEXICO: Las Cruces (1) $81,244, Silver City (1) $71,590, Gallup (3) $197,072, Portales (1) $27,207, Farmington (3) $101,256, Hobbs (3) $73,085, Alamogordo (2) $29,295, Clayton (3) $90,000, Clovis (2) $35,630, Grants (1) $42,504; total, ten projects, $748,883.

OKLAHOMA: Drumright (1) $33,899, Madill (1) $22,181, Chandler (1) $21,025, Elk City (3) $22,731, Anadarko (3) $42,995, Cordell (1) $16,367, Fairview (1) $17,181, Waurika (1) $20,872, Tishomingo (1) $23,610, Medford (1) $14,887, Tahlequah (1) $37,897, Poteau (1) $22,636, Hugo (3) $57,745, Clinton (3) $15,808, Seminole (3) $17,826, Prague (1) $21,826, Beaver (1) $22,342, Lawton (3) $124,561; total, eighteen projects, $556,389.

TEXAS: Brenham (2) $16,925, Quanah (1) $19,667, Gladewater (1) $45,100, Canyon (2) $17,500, Fredericksburg (2) $33,617, Gonzales (2) $12,650, Junction (2) $20,000, Jasper-Kirbyville (1) $84,900, Nocona (1) $11,275, Jefferson (1) $21,550, Marlin (2) $13,775, Odessa (2) $112,700, Lockhart (1) $14,034, Plainview (2) $74,175, Luling (1) $12,656, Memphis (2) $7,750, Garland (1) $59,234, Wellington (1) $14,000, Lufkin (2) $44,931, Monahans (2) $63,250, Marshall (2) $77,223, Seymour (1) $28,000, Carrizo Springs (3) $79,104, Haskell (1) $13,750, Huntsville (2) $53,962, Mason (2) $12,500, Nacogdoches (3) $40,055, Menard (1) $17,250, Llano (2) $1,173, Andrews (1) $15,521, San Augustine (1) $37,650, Slaton (1) $15,000, Freeport (2) $42,300, Atlanta (1) $21,375, Matador (1) $10,000, Decatur (1) $15,075, Smithville (1) $20,011, Navasota (1) $11,000, Knox City (1) $10,062, Angleton (1) $26,625, Eastland (2) $28,000, McAllen (2) $24,281, Coleman (2) $42,500, Littlefield (2) $10,000, Brady (2) $33,500, Sudan (1) $13,700, Plains (1) $4,325, Borger (1) $200,000, Pearsall (1) $7,650, Livingston (1) $28,450, Anahuac (1) $23,322, Cotulla (2) $24,888, Fort Worth (1) $28,545, Alpine (2) $20,000, Denison (1) $41,803, Bryan (1) $53,625, Hearne (1) $21,837, Cleburne (2) $40,562, Uvalde (3) $34,098, Bay City (2) $35,000; total, fifty projects, $1,963,411.

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Airports 16 Miles Square?

Don't laugh that off — an Ohio court has ruled smaller airports illegal. Here's need for wise legislation.

By JOHN H. FREDERICK

WE might as well give up any ideas of small airports for private fliers if a recent decision by Judge Colopy of the Ohio Court of Common Pleas is made to stick. This is because it will then be illegal to construct any airport unless the owners control sufficient property on all sides to assure that no plane will have less than 500 feet altitude as it passes over adjacent property in landing or take-off. This 500 feet is the CAA clearance regulation for a glide ratio of 20 to 1. If this glide ratio is taken as a minimum, airport areas will of necessity be no less than sixteen square miles, even the smallest. This may sound funny but it is no joke.

Judge Colopy's decision is just one more in a steady string of anti-airport rulings handed down in various courts within the last few years. These cases have given ample precedents for the latest ruling. In the Warren Township School case (Warren Township School et al v. Detroit, 308 Mich. 460) the Supreme Court of Michigan held that "airplanes may be flown at proper heights over land below and even though there may be noises and annoyances caused thereby, they will be considered **'damnum absque injuria'**. If planes are flown at such heights as are prescribed by the authorities, as a rule they will not be enjoined. However airplanes may not land or take off at low altitudes and in such close proximity to the property of others as to cause a nuisance or a continuing trespass."

The Supreme Court of Massachusetts in the Burnham case **(Burnham v. Beverly Airways, et al,** 42 Fed. 2nd, 575) stated that "a harmless airplane flight in proper manner, in exercise of public right of air navigation, through navigable air space reasonably established within constitutional limitations by an aeronautics commission, without interfering with any existing use, is not a trespass on land below." In the same case it was, however, held that "ordinarily, airplane flight below navigable air space, established by an aeronautics commission, is not within the public right of navigation and constitutes technical trespass."

Just last year the United States Supreme Court in the Causby case **(U. S. v. Thomas Lee Causby, et al,** 90 L.Ed. 971)* stated that "the defendants assert that the flight of airplanes in flying from the ground to the navigable air space, or vice versa, is lawful under Sec. 60.015 of the regulations of the Civil Aeronautics Authority, which provides that 'except when necessary for taking off and landing aircraft shall be flown, etc.'; but the said path of glide is not within the navigable air space established by the CAA regulations since it governs the method of operating, of landing or taking off. The altitude required for that operation is not the minimum safe altitude of flight which is the downward reach of the navigable air space." In the same case the court held that "the landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land. The fact that he does not occupy it in a physical sense, by the erection of buildings and the like, is not material . . . The superadjacent air space at this low altitude is so close to the land that continuous invasion of it affects the use of the surface of the land itself. We think the landowner, as an incident to his ownership, has a claim to it and that invasions of it are in the same category as invasions of the surface."

Akron Airport Closed

In view of these previous decisions it is not surprising that Judge Colopy held that "the minimum safe altitude of flight fixed by the CAA regulations is not less than 500 feet over the homes of all the plaintiffs herein. It is no less than 1,000 feet over the homes of those plaintiffs residing in the Fairlawn section of Akron." Such a ruling effectively closes the Chamberlain airport at Akron, against which numerous complaints had been made. It will also have practically the same effect on other airports in this vicinity and at other places.

Judge Colopy further held that "the evidence with respect to the use of said runways and the altitudes at which airplanes will fly, when considered in the light of the definition of ownership in the Causby case, compels the conclusion beyond reasonable doubt that the defendant corporation will commit repeated acts of trespass as claimed upon the properties of two of the plaintiffs. Such trespass will be accompanied with direct, actual, material and substantial impairment of their use and enjoyment of their respective properties. There is no adequate legal remedy for such trespass. They ought to be enjoined for the same reasons heretofore stated for enjoining said nuisances. It is not important, in my opinion, to distinguish between technical trespass or nuisance with respect to an airplane flying at low altitude contrary to CAA regulations, if such flights are made within that air space essential to the surface owner's use."

What these cases lead up to is this—a plane in landing and take-off is trespassing. Even though flights over property adjacent to an airport do nothing more than disturb, or even do not in any way disturb, there is still ground for an injunction on the basis of trespass. This is because they are, of necessity, less than 500 feet from the ground, the altitude minimum prescribed by CAA for safety purposes. CAA has the power to change these minimums and if they did they would change the court rulings. Lawyers point out that this line of thinking "converts a governmental safety regulation, carrying penal consequences, into a substantive rule of law governing the private ownership of property. To say that flight below the 500-foot level is a trespass and above it is not, appears to say that ownership of the air space extends only to the 500 foot level. . . . whereas there is nothing in the statutes or regulations which prevents landowners from making any actual use they choose of the air space above 500 feet."

Serious Setback to Aviation

From the standpoint of airport management and aviation, particularly private fliers, this latest decision on top of those which have preceded it will have serious results. Very few airports will be constructed in residential areas where most of the complaints have been coming from. Very few airports will be developed anywhere but at considerable distances from towns. Flying will again go back to the pastures. In fact, very few airports except the big commercial terminals will be constructed at all. The flight strip and the air park might as well be forgotten by some cities. No one is going to build an airport on a piece of land 16 miles square for the private flier.

It all goes back to the fact that the public is not yet sold on aviation. It also means that some airport planners have not been as smart as they might have been in selecting their sites. They have ignored the fact that they may frequently cause prospective plaintiffs "actual, material and substantial impairment of the enjoyment and use of their respective homes." They have

*This important case and its implications were fully discussed in SOUTHERN FLIGHT October, 1946.

ignored the fact that the noise of ordinary operations on an airport property, noise of aircraft on the airport and noise of aircraft in flight but off the airport, may frequently antagonize landowners nearby. In other instances they have apparently ignored the fact that, in take-off, even lightplanes may frequently escape the roofs of nearby dwellings by no more than 186 feet at a 12 to 1 climb ratio, by only 224 feet at a 10 to 1 ratio and by no more than 312 feet at a 7 to 1 ratio, thus causing "reasonable fear and apprehension of physical injury from low-flying planes".

If we are to avoid situations such as that created in Akron and many other planes where the populace arises in protest against airport development, the factor of "fitness of locality" must be considered. No airport can confine all its operations to its own property. Of necessity, the average city extends its activities in numerous flights at varying heights at or under 1,000 feet over the houses of many people. We might as well face the fact that the courts in appraising the public interest in airport "nuisance" cases will consider that interest as being best served by having airports located with reasonable regard for the rights of other people and also at such places that the inevitable expansion of the aeronautical industry may be served. It will be unlikely, in the future, that the courts will uphold the location of private commercial airports at places where it becomes necessary for the planes to fly a traffic pattern over a populous city if the Ohio case is upheld by higher courts. In fact, it may not be necessary to take the matter to the higher courts because the Causby case, decided by the Supreme Court last year, seeks already to have established the fact that the air space below CAA minimums is owned by the landholder.

What can be done to improve this serious situation? The only answer, in view of the continued stringency of court decisions, is for the aviation industry as a whole to sponsor harmless flight-of-aircraft legislation in all states. These bills need not be elaborate. One that has been suggested has but two sections as follows:

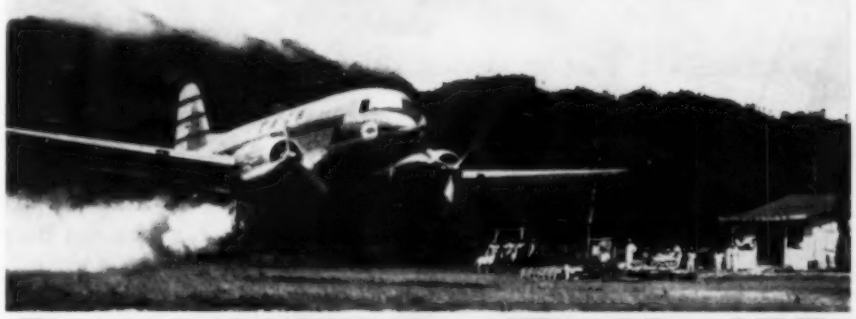
"An act relating to causes of action at law or in equity arising from flight of aircraft over lands and waters of this state. Be it enacted, etc.:

"Section 1. No cause of action at law or in equity based upon flight in aircraft over lands or waters of this state shall be maintained unless other than nominal damage results therefrom, or unless irreparable damage will probably result therefrom.

"Section 2. This act shall take effect immediately."

It may be difficult to get acts like this passed but a fight for such legislation will at least serve to bring this important matter to the notice of all concerned in a way which nothing less than concerted action will accomplish. ★ ★ ★

COMMERCIAL JATO



FIRST airline to install jet-assist rockets on scheduled passenger liners is TACA Airways, Latin American line recently certified by CAA as a Foreign Air Carrier. TACA will use Jato only in instances of engine failure or other take-off hazards at small turf fields. Photos were made during jet-assist demonstrations.

A TACA liner (top) demonstrates jet-assist at La Cumplida, Nicaragua. Center, an Aero-Jet technician installs unit on DC-3. Captain George Oberly (right) indicates switches he flips to ignite rockets. Bottom, jet-assist take-off at Alamicamba, river port deep in Nicaraguan interior.

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Surplus Radios for Small Airport Use

Helpful suggestions on selecting surplus transmitters and receivers for conversion to private control tower work.

By KARL H. STELLO

THERE is a great deal of surplus Army-Navy radio equipment on the market today suitable for small airports, but there are several considerations to be taken into account before purchasing this equipment.

The equipment should be capable of being converted to the proper frequency with a minimum of work. The second consideration is ease of operation. The equipment should be operable with one or two switches and by pushing a microphone button to talk. It is absolutely necessary that no changes be required for operation of the transmitter when it is to be operated by the holder of a restricted radiotelephone operator's permit. The third consideration is the power supply. Almost all power supplies for surplus equipment consist of direct current genemotors which must be operated from batteries on 6 to 28 volts. This type of operation is unsatisfactory because the batteries must be recharged every night. Since the power supplies draw heavy current, the batteries will not last very long under daily use.

All surplus equipment can be converted to 110 volts alternating current equipment by a local radio serviceman or a radio amateur at reasonable cost. Or, heavy-duty, high-current battery chargers will operate some equipment without making any changes.

Another consideration is that the transmitter must be crystal-controlled to enable operation by the holder of a restricted radio-telephone operator's permit. Furthermore, it must be approved by the Federal Communications Commission and should have good stability.

Changes to airport transmitters that affect the frequency must be made by the holder of a F. C. C. second class, or higher, radiotelephone operator's license and the local Federal Communications Commission Office should be consulted for approval before operation.

Suitable Surplus Models

The BC-375-E transmitter is one of the best suited for small airports and has an output of 30 to 50 watts on 200 to 500 kc., 60 watts on 3,000 to 4,500 kc. and 60 to 75 watts on 6,200 to 7,700 kc. Power output can be adjusted to lower value if desired. This transmitter can be converted to crystal operation and uses standard commercial tubes which are readily available. The price, complete, is only about $50.

The BC-375-E transmitter comes complete with a 28-volt dynamotor for battery operation but can be changed to operate from 110 volts ac. with a high voltage power supply at additional cost of about $100.

A 0-500 millimeter indicates total plate current and a radio frequency ammeter indicates antenna current. The use of the meters and all operational procedures are completely described in the technical manual which accompanies the equipment, which is used in C-54 and B-29 aircraft.

This transmitter is simple to operate and can be used for either voice or code. Four different antenna-tuning circuits are built into the equipment and each circuit is individually adjustable to allow operation to a wide range of antenna resistances.

The BC-223 is a small, reasonably-priced transmitter that is easily converted for use in medium-sized aircraft because it has provision for crystal operation on four different frequencies as well as having a variable frequency oscillator. This covers the range 3,000 to 4,500 kc. with the tuning unit TU-18A, but could not be very easily converted to airports using a low frequency in the 200 to 400 kc. range. The price is only about $40 and the output is about 20 watts using voice.

The surplus Navy ART-13 transmitter is very satisfactory for airport use but requires change to crystal control operation and a high voltage alternating current power supply. It is higher priced than most other surplus transmitters and much more complicated. Cost is about $250.

The receiving section of the Number 19, Mark 1-11-111 tank transmitter and receiving set, made by Zenith and Emerson for lend-lease, is a good buy for small airports since the receiver covers 2 to 8 megacycles which includes both 3,105 kc. and 6,210 kc. The cost is only $78.50 and this transmitter section also requires converting to crystal control with an alternating current power supply.

The BC-284 is a combination transmitter and receiver, housed in one unit, that would be satisfactory for airport use with changes in frequency and a crystal control unit for the transmitter. The transmitter has an output of about 11 watts using voice and the complete cost is only $100. It has a 6 volt dynamotor power supply which can be replaced by a rectifier power supply and filter system.

Most war surplus radio transmitters require considerable changes before they can be put into service as airport transmitter with FCC approval. However, every surplus radio has a lot of good parts in it which could be used by a local radio amateur or a radio-trained veteran to build a good airport transmitter. Almost all parts used in surplus radio equipment are built to take a very severe overload under the worst possible operating conditions—they have to be good.

The transmitter for a small airport need be only low power, about 25 to 30 watts and at present low frequency, 200 to 400 kc.

Receiver requirements are not elaborate. A receiver should have at least one stage of radio frequency ahead of the first detector to eliminate images. The receiver may use the same antenna as the transmitter if a change-over relay is provided to switch antennas.

The whole radio installation for small airports should not cost over a few hundred dollars, using the surplus equipment described. This equipment should last at least several years until better equipment is put on the market. Frequency changes to a higher frequency band as contemplated by the FCC will make any radio equipment that is installed now obsolete within a few years.

No Antenna Problem

The antenna is the most important part of any radio transmitting system. Since most surplus transmitters have special antenna tuning units and will work on almost any antenna, this problem is simplified. The proper length for a particular antenna may be found by consulting a radio handbook. The wavelength is measured in meters which must be converted to feet. A grounded type Marconi antenna is more satisfactory for lower frequencies and an ungrounded Hertz di-pole antenna is more satisfactory for the higher frequencies around 3,105 kc.

The rod antenna that comes with

the BC-284 is suitable for both transmitting and receiving as well as being easy to put up. This is 25 feet high and consists of 8 mast sections, equipped with guys and counterpoises. This antenna unit has a mast bracket and base insulator. Connections should be made with low-loss co-axial cable to avoid losses in the transmission line. The length of the transmission line is not so important as long as a non-radiating feeder system is used, such as co-axial.

A pair of "A" frames can be assembled to meet the requirements of any antenna system. These consist of two two-by-fours bolted together at one end, with a long two-by-two in the center and spread apart at the base to look like a large "A". These are usually center-fed with the proper matching lead-in line to give best results with low losses.

Any transmitter and power supply should be grounded together with an external ground to earth or to a cold water pipe. The antenna should be grounded when not in use as a protection against lightning and static charges.

It is always desirable to have two-way radio equipment at even the smallest airports for use at air shows, as an aid in tracing lost planes and in other emergencies. Surplus equipment offers an economical opportunity to obtain such installations until better equipment costing much more is available. ★ ★ ★

THIS MONTH'S MODERN AIRPORT

(Photo on page 27)

UNIVERSITY Airport, a Class II field located on the 530-acre Straloch farm 2 miles west of Davis, California, has been in operation since April, 1946. C. Harold Hopkins, owner of this modern airport and all facilities, has already invested $150,000 in development and plans to spend an additional $350,000 on improvements. Present all-weather runways are 150 feet wide with length ranging from 3,400 to 2,400 feet. Plans call for extension of one runway to more than a mile while the others will be lengthened to 4,700 and 3,500 feet.

All airport buildings are constructed of cement block and steel. These include a pilots lounge, two large hangars containing office and storage space, and a dope and fabric building. The pilots lounge is glass-enclosed on three sides, has a huge fireplace for winter heating and an air-conditioning unit for summer. A private stable near the airport stocks saddle horses for visiting fliers, barbecue pits are located in a grove near the field, and a swimming pool is planned for next summer. Future plans call for an airport restaurant located near the pilots lounge. Hopkins also plans to subdivide 140 acres of walnut orchard into rural homesites with private hangars for residents near the airport.

Hopkins, who owns University Airport, is both a farmer and business man. A graduate of MIT, he learned to fly in 1945 and now uses an Ercoupe to travel between properties. Those who succeed in aviation selling, he believes, will pattern their enterprises after the automobile industry and other successful businesses. All flying operations at University Airport have been leased to Straloch Flyers, Inc., an organization which Hopkins heads as president. John C. Patterson, vice president, is also airport manager. Shop work and agricultural flying concessions have been leased to Interstate Commercial Flyers, Inc. ★ ★ ★

Wisconsin Radio Stations Broadcast Weather for Pilots

Weather information especially designed to fill the needs of pilots, highway travelers and other special groups is now being broadcast thrice daily except Sunday over Wisconsin's state-owned radio stations WHA, Madison, and WLBL, Stevens Point.

Inaugurated Jan. 6, the new program consists of broadcasts at 8:30 a. m., 9:55 a. m., and 1:58 p. m. by Weather Bureau personnel from Madison.

Each 8:30 a. m. broadcast includes: (1) A summary of developing weather conditions, including positions and movements of fronts and pressure centers; (2) a detailed forecast of conditions expected during the morning, including precipitation, cloudiness, ceiling and visibility, turbulence and icing conditions, and winds; and (3) a round-up of spot weather reports as of 6:30 a. m. from Land O'Lakes, Park Falls, Duluth, Wausau, Green Bay, Milwaukee, Madison, La Crosse and Lone Rock.

At 9:55 a. m. the detailed forecast is extended through the afternoon, and general forecasts for Wisconsin are extended through the following day along with forecasts for adjoining states.

At 1:58 p. m. the broadcast is devoted principally to spot weather reports as of 12:30 from the various local reporting stations, and to changes in the previous forecasts.

STANDARDIZED LAYOUT for small airport chain proposed by Richard H. Gans of New York, includes float ramp, large hangar, ad building, car park and "bomber cafe" as shown at right and a row of T hangars on opposite side of field.

Hook Heads CAA Airports; Donaldson in 6th Region

H. Arthur Hook, Deputy Administrator for Airports of the CAA, has been appointed Assistant Administrator for Airports, effective Jan. 12. He succeeds Charles B. Donaldson, who has been transferred at his own request to the Sixth Region, where he will serve as Airport Engineer for the State of Nevada. Hook is a veteran of almost 20 years with the CAA.

High-Intensity Lights for 10 Major Airports

Civilian airports in ten cities have either begun or completed installation of new elevated high-intensity runway lights to supplement other air navigational aids, ATA has announced.

The new systems in Boston, Newark, Indianapolis, and Elizabeth City, N. C., are already in operation. Installations have begun in New York, Chicago, Philadelphia, Minneapolis, Baltimore, and Worcester, Mass.

State Registration in Colorado Planned

State registration of airmen and aircraft are included in six proposals recommended to the Colorado Aeronautics Commission by Willard J. Bain, director. Other points in his plan would provide state weather broadcasts, state accident investigation, air marking and air education. An appropriation of $500,000 to finance the commission is being sought.

4 PEOPLE, 81 LBS. LUGGAGE
20 CUBIC FT. COMPARTMENT
2 PEOPLE, 455 LBS. CARGO
46 CUBIC FT. CARGO SPACE
PILOT, 645 LBS. CARGO
55 CUBIC FT. CARGO SPACE

HERE'S *USEFUL* PERFORMANCE—Four large people can fly over 500 miles nonstop in luxurious comfort... or the *Navion* can be turned into an easily loaded cargo plane. See above.

Complete a three-day business trip tomorrow

IN THIS PRACTICAL 4-PASSENGER PLANE

You can get there—*and back again*—all in the same day . . . take your staff right along with you in the big, all-metal *Navion!* This easy-to-fly North American personal plane provides all the armchair comfort you expect in the finest cars, and offers safe, practical transportation at a cruising speed of 150 MPH. Take the wheel soon in a flight demonstration to learn how easy it is to "drive" the *Navion.* CAA Approved Type Certificate No. 782.

For illustrated brochure and name of dealer near you, write Dept. L-10, North American Aviation, Inc., Municipal Airport, Los Angeles 45, California.

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CREATORS OF P-51 MUSTANG . . . AND ADVANCED ARMY AND NAVY AIRCRAFT

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. . . a million dollars worth . . .

AT YOUR PRICE!

THESE PARTS, accessories and components in working condition. From multi-engine surplus military stocks. Will be sold "first come, first served" at prices so fabulously low you cannot afford not to investigate. Just about every "gadget" you might need is here for you at the kind of price it is a pleasure to pay.

Write, wire, phone — or come yourself.

HARRY A. HAMMILL

Altus Airport · Altus · Oklahoma

WAA Speeds Disposal of Surplus Airports

In a series of moves to speed the disposal of surplus airports to interested municipalities, the War Assets Administration has abolished the Surplus Airport Disposal Committee, set a 14-day deadline for the Army to review CAA reports on airports to be cleared, arranged for receipt by WAA of personal and real property inventories on the airport before disposal proceedings are begun, and decentralized airport disposal operations from Washington to WAA field agencies.

In announcing the new procedures to the U. S. Conference of Mayors, War Assets Administrator Robert M. Littlejohn said that the mayors could help the program by becoming familiar with the requirements of the Surplus Property Act, lining up local interest in advance; reviewing their legal authority to accept a conveyance with the restrictions placed on it by WAA, and analyzing their economic ability to perform maintenance work on airports.

He added that a target date of April 30 had been set for offering the available airports on WAA records.

Texas Airmen Call Legislative Meeting

An all-day meeting to discuss state aviation legislation proposals before the Texas legislature will be held at Hotel Raleigh, Waco, Texas, Tuesday, February 11. Representatives of commercial aviation interests and flying organizations are invited to attend.

The meeting will convene at 10 a. m. Adjournment is expected in mid-afternoon so pilots can return to any part of the state by nightfall. An attempt will be made to solidify state aviation opinion on new proposals for taxation and legislation affecting every phase of aviation in Texas.

Michigan Research Center Begins AAF Project; Jack Fontaine Directs Activities

A. P. (Jack) Fontaine, former director of aircraft development for Bendix Aviation Corp., has been appointed director of the University of Michigan Aeronautical Research Center at Willow Run Airport, and work has already started on research contracts totalling more than $2,000,000, largely with the Army Air Forces.

The University's work includes research on the development of supersonic missiles, investigation of upper atmospheres, and the development of fuels for jet and rocket propulsion.

The University operates the entire airport under license from War Assets, and leases facilities to seven airlines. Its own facilities include laboratories and offices in the southern end of the big main hangar, and a supersonic wind tunnel now under construction in the former warm-up hangar.

Fontaine's staff includes seven group engineers, all members of the faculty, and each in charge of specific subjects; and 18 full and part-time designers who will seek to apply the product of research to the solution of specific problems. In addition, approximately 70 graduate students now are engaged in research work at the center.

Radar Experiments in Commercial Aviation Accelerated by Installations at New York, Washington, Chicago, Oakland

A large, high-power search radar will soon be installed on the grounds of Queens College, three miles east of New York's LaGuardia Airport, as an aid for the CAA in directing and controlling air traffic in the New York area.

Known as MEW (Microwave Early Warning) the radar and associated height finder will be mounted on two 100-ft. steel towers and will be able to "see" all aircraft flying in the New York area and approaching or leaving all the major airports in the area, and to indicate their exact position and altitude to ground-based operators and control personnel. Construction work at the site is already well under way, and it is estimated that the installation will be completed and ready for use by April 1.

Ground radar equipment is to be installed at Washington National Airport and will include a microwave early warning system (MEW) and a TPS-10 "Little Abner" height finder as well as GCA, the Army Air Forces revealed late last month. The MEW, with a range of 200 miles, will have five scopes remoted to the CAA traffic control center, and two to the CAA weather service, plus those manned by AAF controllers. The equipment is being installed at the request of the Army's All Weather Flying Service, and will be manned by Air Defense Command personnel, who are scheduled to instruct CAA personnel in use and interpretation of the scopes.

The Navy last month invited civilian use of its GCA (Ground Controlled Approach) facilities at the Oakland Municipal Airport. Approach and landing procedures for the use of the facilities have been submitted to the Oakland Board of Port Commissioners.

Major General Harold M. McClelland, commanding general of the Airways and Air Communications Service, disclosed the AAF will have 56 GCA units in operation by summer, 35 of which will be located within the continental United States.

Domestic units are now operating, he said, at Clinton County, O., AAF; Barksdale Field, La.; Andrews Field, Md.; Westover Field, Mass.; Fairfield-Suisun, Calif., AAF; Mitchell Field, N. Y.; Langley Field, Va., and Elgin Field, Fla.

A Bendix Airport Surveillance System (AN/GPN-2) is to be tested by CAA for auxiliary monitoring in connection with existing air traffic control procedures at Pittsburgh Airport. The equipment, which is being supplied on loan by the U. S. Navy, is designed as a mobile supplement to GCA. It gives 360-degree radar coverage within a radius of 30 nautical miles, and up to an altitude of more than 10,000 ft.

Limited operation of AAF-loaned GCA was scheduled to get under way at LaGuardia Airport January 15. Use of the equipment will be optional with pilots of commercial aircraft, and during the initial test period, the GCA will serve primarily for monitoring purposes and as an assist proposition to help pilots land under instrument conditions. The LaGuardia operation is part of a three-airport test being sponsored by the Air Transport Association, CAA and Air Line Pilots Association to determine the commercial applicability of GCA.

American Overseas Airlines has disclosed that the eight Boeing Stratocruisers it now has on order will be equipped with airborne radar. The equipment is presumably a development of the Army APS-10 with which American has been experimenting since VJ-Day.

Highlighting the month's radar developments, a one-man GCA system was demonstrated to the press by Gilfillan Brothers in Los Angeles last month. Homer Tasker, chief engineer of Gilfillan, said that this latest version of Ground Controlled Approach could bring in a plane every two minutes with one man operating it, and two planes within 30 seconds with two operators. He said the company hopes to keep the price of the equipment under $100,000, and that it will be ready for quantity production by November.

Burbank Operator Heads California Trades Group

Norman Larson, Burbank, has been elected president of the California Aviation Trades Association, California chapter of the National Aviation Trades Association. Other officers elected were: Douglas Kelly, San Diego, vice president for the southern region; LeRoy Adams, Fresno, vice president for the central region; and John Schwaner, Sacramento, vice president for the northern region. Harvey Martin, Long Beach, was named secretary-treasurer.

The CATA directors have adopted by-laws outlining a work program and approved plans for a membership drive. Richard B. Thurber has been appointed state executive director.

Tennessee Bureau to Install Weather Teletypes on Private, City Airports

Limited funds are being allocated by the Tennessee Bureau of Aeronautics to install and maintain weather teletype installations on a few of Tennessee's private and municipal airports, Charles Ragland, chairman of the Bureau, has announced. After a trial period, the Bureau feels that a great number of fields will continue the service on their own accord.

The installations are known as drop installations, and the approximate cost per month is $20 machine rental, $6 per month local channel and connecting charge, and $1.50 per mile line charge to the nearest connecting point on the CAA system.

The Bureau is endeavoring also to have broadcasting stations in the state announce weather reports every hour.

Logging the COAST

by Midge Winters

NEW LIGHTWEIGHT 120 HP ENGINE

A 120-hp. engine weighing 150 pounds, or slightly over one pound per horsepower, has been developed for aircraft use by McCulloch Motors Corp. of Los Angeles. The 2-cycle, opposed-piston, supercharged engine weighs approximately 100 pounds less than any comparable aircraft engine now available, according to officials.

This is the first headline news about engines from the West Coast since Fred Thaheld promised development of his diesel engine and Ted Nelson announced his 2-cycle, 4-cylinder, 25-hp. engine made of magnesium and weighing about 40 pounds.

Robert P. McCulloch, president of McCulloch Motors, says that performance of the new 2-cycle prototypes has "equalled our best expectations in fuel economy, power per pound ratio, and dependability."

McCulloch Motors, which moved to its new location near Los Angeles Airport in December and was formerly known as McCulloch Aviation, Inc., in Milwaukee, Wis., also produces the Model 4300 2-cycle, 4-cylinder crankcase-scavenged, target aircraft engine developing more than 60 horsepower and weighing only 74 pounds.

Wings for Girl Scouts and Students

NOT to be outdone by their English cousins, the Girl Scouts of Los Angeles, Wing Scouting division, recently took up soaring. Girl Scouts of England have long been skilled in motorless flight.

The Los Angeles Scouts began their course of soaring indoctrination with the Drangonfly, only auxiliary powered glider in the United States, now based at Metropolitan Airport in Van Nuys.

Air speed indicators and tachometers became less like foreign objects and more like aircraft instruments to the girls as they also heard lectures on navigation, aerodynamics and flying safety from veteran glider pilots Myron Wells and Harry Pearl.

"Whether our girls actually take to the air as pilots or not," said the regional Scout chairman, Mrs. Louis Johnson, "we feel that soaring will give them the fundamentals of flying."

Also well under way is California's CAP-sponsored program to orient high school students in aviation. Three hundred and fifty students have already begun their flight indoctrination courses under supervision of the State Department of Education in Pomona, Chino, San Bernardino, Redondo, Santa Barbara, Compton and San Diego.

The program offers each student eight 30-minute flights in lightplanes piloted by the California Wing of the CAP. Five thousand students are expected to participate in this program.

It is interesting to know that 75 per cent of California's high school students expressed a desire to enroll in the flight indoctrination program; present funds, however, limit each high school's quota to 50. Seems the airlines and aircraft manufacturers might well afford to back such statewide projects, for herein may be developed many a prospective customer.

Strictly Gossip

AVIATION presented a gloomy front along the West Coast these past few weeks as airlines suffered declining stock prices and load factors, as aircraft manufacturers retrenched by lopping off some of their best salaried and experienced men, and as lightplane salesmen forlornly beat the bushes.

However, there were a few bright hopes here and there. Volmer Jensen, it was said, might still become the Henry Ford of aviation with his VJ-21 powered with a 75-hp. Continental atop its glider-like wing and aft of the cockpit. Unconfirmed rumor had it that he might be able to sell the ship for around $1,000, but public demand had already dictated a tricycle landing gear instead of its monowheel gear.

The Skylark Manufacturing Company's lightplane is still shelved, but there are hopes of the company's financial problems being solved in order to produce the ship. Fortunately for the way its flight tests have been handled, a CAA certification would not be the long drawn-out and costly process that it usually is.

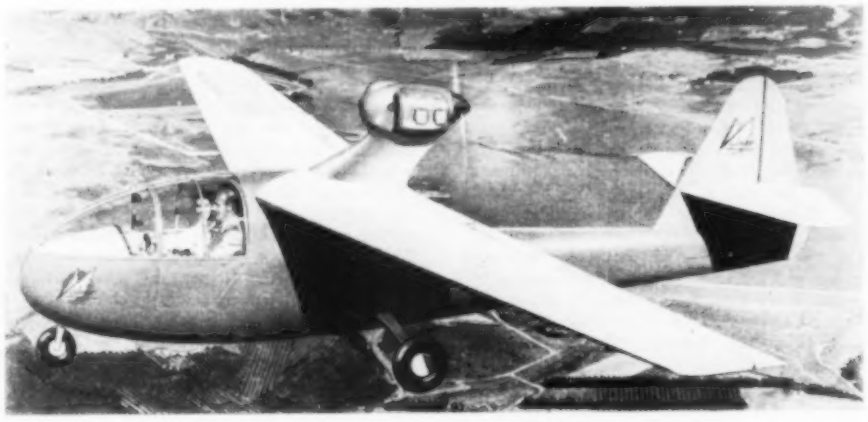
The Ensign, the All-American Aircraft, Inc., lightplane, and the tandem rotor helicopter of Rotor-Craft are also nearer assembly lines, and United Helicopters, Inc., has acquired a new 65-acre site in Northern California for assembly and fabrication of the Hillercopters.

Airparks

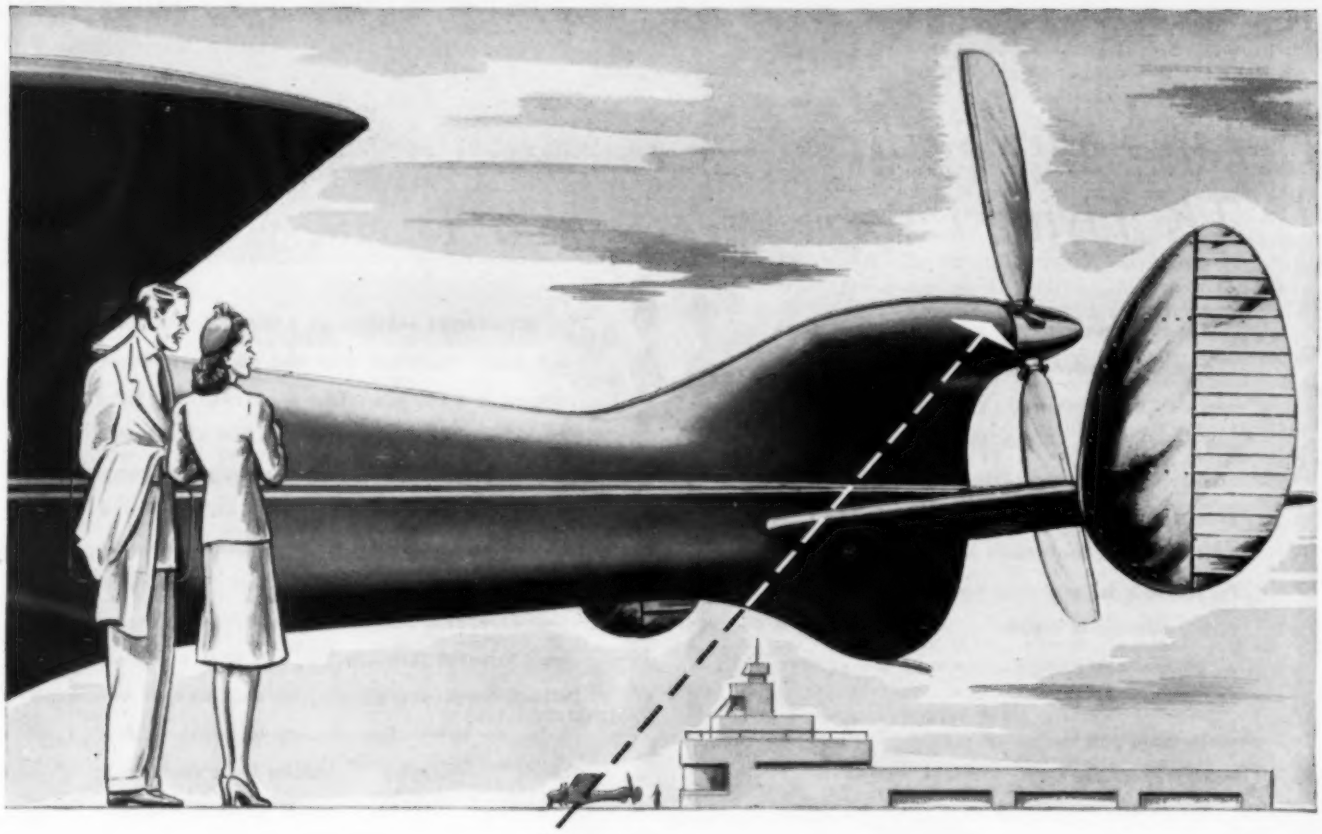
CLEAR indication that things must be getting better is that there have been no recent rumpusses from the Pacoima citizens who, when things get dull, threaten to close Whiteman Airpark, one of the best private fields on the Coast.

Palm Springs, desert spa of California, is certainly alert to the effect aviation can have on its tourist industry. It has awarded a ten-year lease of its airport to former Wasp Mary B. Nelson, who has already announced plans for a modern pilots room and a snack bar, plus an all-out recreation program for the private pilot.

Desert Airpark near Palm Springs has also been officially opened with 28 housing units by pilot-owner Hank Grogerty. Future plans call for every convenience and recreation. ★ ★ ★



PRODUCTION PROMISES FOR WEST COAST PUSHER include a third revision of the original Jarvis powered glider, second revision of which is pictured in flight test. Volmer Jensen, the designer, and John Carssow of Glendale, Calif., purchased it from Jarvis Manufacturing Co., and plan to make it a $2,900 3-place, 75-hp. all-metal tricycle. Volmer reported flight tests indicated performance of the 2-place, 75-hp. (Continental) model included 110-mph. cruising speed and 750-fpm. rate of climb for first minute.



Why here?

Ever since the early days of aviation, the propeller on the nose of a tractor-type plane has subjected all surfaces behind it to the additional drag of the turbulent slipstream. Placing the propeller on the tail of the Waco *Aristo-craft* eliminates this drag.

Gone from the cabin are the customary propeller noises.

On the ground, elimination of "prop wash" allows plane doors to be opened easily . . . passengers may enter without walking into a "cyclone."

Last and far from least, the propeller is in the *safest* location on the airplane. Propeller accidents are virtually impossible with this arrangement.

That's why the Waco Aircraft Company has incorporated the "tail propeller" in its four-place *Aristo-craft* — the airplane with simplified uni-control.

Waco Aristo-craft

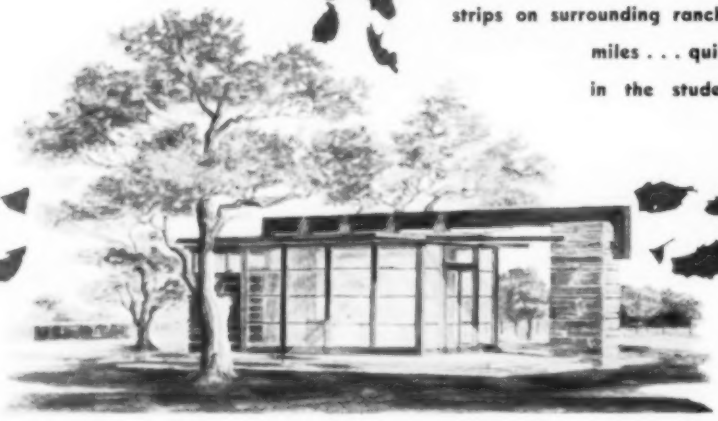
THE WACO AIRCRAFT COMPANY, 1402 PETERS AVE., TROY, OHIO, U. S. A.

Life's Sure Swell at The Flying L

☆ Try to picture it . . . a real old-time ranch . . . and a modern dude ranch . . . fine airport . . . flying school . . . a model playground and rest haven . . . on 550 acres of wooded landscape in Texas' scenic hill country. That's BANDERA AIRPARK and THE FLYING L RANCH, just 32 air-miles west of San Antonio. Perfect spot for a perfect vacation . . . deer and turkey hunting in season . . . angler's paradise . . . horseback riding . . . swimming . . . dancing . . . or just plain loafing in the good Texas sun.

All-Weather Runways and Taxiways

☆ All-weather runways of BANDERA AIRPARK are easily identified from the air. North-South runway is 2,800' . . . East-West runway 2,500'. Pilots Lounge and restaurant are just a few steps away. Courteous service awaits you at the ramp . . . where the "Follow Me" jeep will guide you as soon as your wheels touch. Quick transportation always at your beck and call. Vacationers find BANDERA AIRPARK ideal for flight training. Selected instructors . . . a fleet of meticulously clean aircraft . . . ten easy-to-spot airstrips on surrounding ranches all within a few miles . . . quickly build confidence in the student learning to fly.



Private "T" Hangars and Complete Repair Shop

☆ Storage facilities include unitized concrete "T" hangars with stalls 50' x 40' x 12½' . . . a 40' x 100' lightplane hangar . . . complete operations office . . . 60' x 100' air conditioned service and repair shop. There's no "guessing" done here. Repair charges are accurately determined beforehand, so that the customer knows exactly what his job is going to cost and how long it will take. Whether it is a tank of gas you want . . . an engine check . . . or a complete overhaul, skilled A & E mechanics are anxious and fully equipped to please you.

☆ *Bring your family to* The Flying L *for a never-to-be-forgotten vacation . . . in the dude ranch center of the great Southwest. Picturesque guest cottages by the day or month. . . . wood-burning fireplace in the living room, private bath with each bedroom. Close by are the swimming pool . . . and a modern night club. Bandera's stimulating climate will inspire you to second helpings of truly wonderful cooking. Yes, genuine hospitality awaits you at* Bandera Airpark *and* The Flying L Ranch, *first of its kind in an aviation-conscious world.*

WELCOME TO
BANDERA AIRPARK
and the

Flying L Ranch

Col. and Mrs. Jack Lapham
Bandera, Texas

More Places to Go

OUR discussion last month bemoaning the lack of places to go aroused comment and some protest from people who know where there are a few places to go. But we stand pat on our statement that there are not enough places to be visited comfortably and expeditiously in airplanes. There must be a great many more landing places and, for the purpose of selling airplanes to the general public, a great many more resort landing facilities than we have. However, all those who wrote us have points worthy of note.

Friend Tom Carey writes that our complaint is heard a good many times around airports in New York and is a common one wherever land-plane pilots gather. He goes on as follows:

"Notice I said 'land-plane pilots,' for the pilot of a float-equipped ship usually finds that he has plenty of places to go. What's more, in most cases he can land right in front of the spot he wants to visit on a smooth, level water runway that may be miles long."

It is true that amphibian and float-equipped airplanes have more choice of places to land. It is true that most resorts which interest us are on water and consequently float planes could be used with satisfaction.

Without detracting from the float angle at all, it would be rather difficult for someone living in Dallas, for example, to use a float airplane. There is no water landing area in the vicinity of Dallas except the Naval Base, which probably would not be available to most people.

We do know of people living in Louisiana, the Great Lakes region, the Thousand Lakes region, and the New York and San Francisco area who have float-equipped planes. This is great for them. The amphibian would be more to our liking for the majority of people living inland. Such a ship could take off from land and sit down on water wherever desired. We have done a little flying in amphibians and believe it is the stuff.

Friend Don Flower of Cessna referred us to SF's picture on the front cover last month—it showed a Cessna unloading at the very door of the lodge at Lake Tahoe. He writes in to say that that airplane landed and taxied up to the point at which the picture was taken. He assures us that they didn't ship it down in parts and put it together on the front door of Tahoe Lodge.

We know of a few such places. But what we are agitating for is an increase in the number of these things.

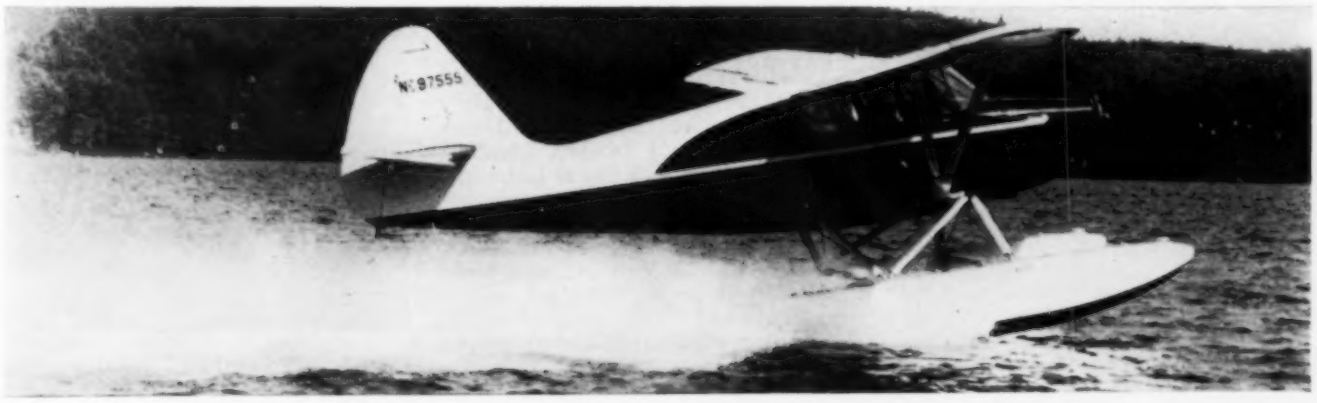
Friend Robert Herr writes in from Newkirk, Oklahoma, to tell us about the Newkirk Sky Park he operates—a wonderful place to go. Newkirk is on the air route from Dallas to Wichita, Kansas, via Oklahoma City and is also on the air route from St. Louis to Amarillo, being about half way and a good place to spend the night. The Newkirk Sky Park has a sod landing area as smooth and level as a floor, with north-south runways 3,150 feet; east-west runways 1,500 feet, and all other directions 2,500 feet. Any light, small plane or small twin engine aircraft has plenty of room at Newkirk Sky Park to get in or out.

About a hundred feet from where a good tie-down is provided one finds the first tee of a nine-hole golf course, said to be one of the best in Oklahoma (Oklahoma, incidentally, has some of the best courses in the United States). That's good. Still another hundred feet puts you on the bank of a nice lake, full of hungry fish and large enough for a small float job (page Mr. Edo again). In addition, Newkirk Sky Park adjoins two good tennis courts, outdoor fireplaces with firewood handy, picnic tables and benches, shelters in case of rain, a large clubhouse for dancing, boats, pier for swimming, swings for the kids and lots of trees and lawn. Plans for the coming summer include restaurant and cabins. The town is just two and a half miles away and transportation is furnished free of charge. A hangar is being constructed at present and many other things are planned for the near future, one of which will be lights for night operation. Friend Bob Herr invites us to grab our shotgun and come up because skeet will be arranged for the summer.

This is along the line that we are talking about and if several hundred such places could be arranged around the United States, at least one in each state or within 150 or 200 miles of most large cities, there ought to be a tremendous increase in the number of private planes and private fliers. After all, these people want to get there quickly in the small amount of time they have on the week-ends and holidays.

Operator Problems

YESTERDAY we were talking to an operator of a hangar on a local private field. This chap was bemoaning the fact that he had to pay $6,000 a year rental on his hangar. In talking the thing over we worked out some figures about like this: The hangar, including plumbing, etc., cost $40,000. Six per cent interest on this sum would be $2,400 per year and taxes would amount to another $1,500 per year. The pro-rata portion of the field, including paved runways



MORE PLACES TO GO BY FLOATS is the experience of owners and operators familiar with water gear. Here's a Stinson Voyager 150 undergoing CAA flight tests at Long Lake, Maine, which resulted in approval for installation of Edo Model 2425 floats. Gross weight was increased only 85 lbs., cruising speed was lowered to 108 mph. —(Edo Photo.)

and other facilities that would correspond to this hangar, would amount to $20,000. Interest at 6 per cent on $20,000 would be $1,200 and taxes would amount to $750. . . . a total of $5,850. Thus the payment of $6,000 rent per year on the hangar does not seem to be much more than just reasonable return on an investment.

The operator complains that the owner of the field levied a charge of four cents per gallon on every gallon of gasoline sold. But this, in view of the fact that not an enormous number of gallons are sold on that field, probably does not greatly augment the owner's income.

After all, we once owned a quarter interest in an airport and understand how difficult it is to extract any profit from such an operation.

Small hangars are not efficient because for the floor space the cost per square foot is higher in a small hangar than it is in a large one. Cost of maintenance and operation is also higher in a small space than it is in a large one. Obviously, if each operator on a field operates a small hangar he has less possible total revenue and consequently his overhead eats it up.

Personally, we believe that there will have to be more traffic on better airports than we have at present. It is very difficult to operate safely without a control tower, it is difficult to operate without weather information, it is nearly impossible to operate at night without lights and other night landing facilities.

Until the end of the war most people who flew at night or in heavy equipment depended upon the municipal airports. These, it is true, were expanded tremendously during the war but during and since the war airlines have expanded to the point that they practically use all the facilities around most municipal airports. There certainly is no room in the terminal buildings for anybody except the airlines and airline passengers. Most municipal control towers will not permit you to leave your airplane within easy walking and luggage carrying distance of the terminal building for any length of time.

Before the war it was practically impossible to discover a commercial or private airport equipped with lights, paved runways, etc. We have found only a few around the country. Most of these enjoy insufficient volume to defray the expense without increasing prices beyond the limit of the customer's ability to pay. This defeats the whole purpose by running off new prospects and the only answer has been for the individual who owns the field to sink his money in and operate at a loss until he can hope to build up the income to the point where it is profitable. This, in the case of the field with the $6,000 hangar rent, has not yet taken place.

We think the only solution possible is for every economy to be practiced by the operators on the field, every service to be given that will attract new clientele, and every opportunity exploited to increase sales and revenue by whatever method.

We have seen this successfully tried by a number of people in different parts of the country. It is simply a matter of doing some thinking and some working and co-operating with others who are in the same situation. We are going to have to work this thing out some way or another. It seems improbable that the GOP with its tax cutting program and its budget balancing ideas intends to subsidize private flying as Mr. Roosevelt might have done.

Come to think of it, we'd rather have it this way. Wouldn't you? ★ ★ ★

Deluxe Charter Service Has DC-3, Mallard

BEN'S IN BUSINESS with some of the finest equipment and pilots available. Pictured beneath the nose of their DC-3 club ship are (left to right) Vernon H. (Pancho) Ramsey, Bransom and O. P. Russ.

WHAT is probably the country's most luxurious aerial charter service has been established by an air-minded Dallas executive in partnership with his pilot. Jack Burrus, mill and elevator operator, has used executive transports since 1934, decided other Southwestern executives should be shown the advantages of personal transports.

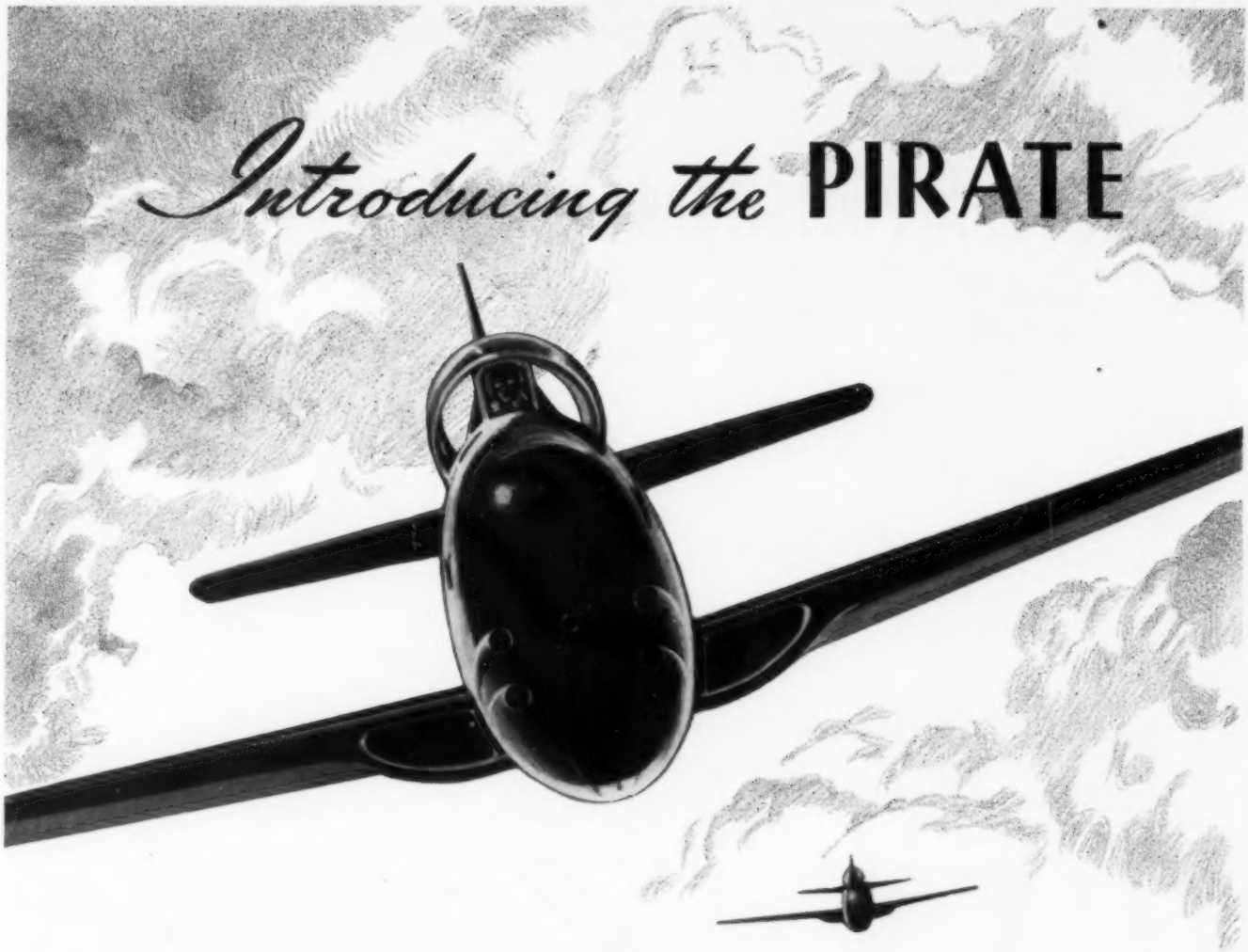
Burrus entered into a 50-50 partnership with Ben Bransom, long-time airman who has piloted him about the Western Hemisphere for 5,000 hours. For the new charter service, Burrus allocated a plush DC-3 and his own Lockheed 12, which has been the official Burrus Mill and Elevator plane since August, 1945. A twin-engine Grumman Mallard amphibian, expected momentarily, will be used by Burrus as his personal transport and, when not needed, will join the DC-3 and Lodestar in charter work. The DC-3 is outfitted with a convertible interior, being available either as a 28-place transport or as a luxurious "club" plane.

The charter owners declare that convention-goers and other groups can charter the DC-3's 28 seats for the individual cost of Pullman fare. The Lockheed will be used for groups too small in number to need the larger DC-3. Master of the DC-3 will be Vernon H. (Pancho) Ramsey, colorful ex-airline captain with 16,245 hours in the air. Also on the charter crew is O. P. Russ, former test pilot.

The DC-3 is offered at $1 per mile, the Mallard at 75 cents per mile and the Lockheed at 50 cents per mile. Bransom believes his is the only service offering such a variety of equipment. Bransom and his two aides are widely known as old-timers in aviation. Added together, their flying experience totals over 30,000 hours and more than 60 years. ★ ★ ★

FLYING GOVERNOR of Michigan, Kim Sigler, recently took delivery of his Cessna 140 at the Wichita factory. Cessna said he bought it with his own funds, will maintain it for personal transportation.
—(Cessna Photo.)

Introducing the PIRATE

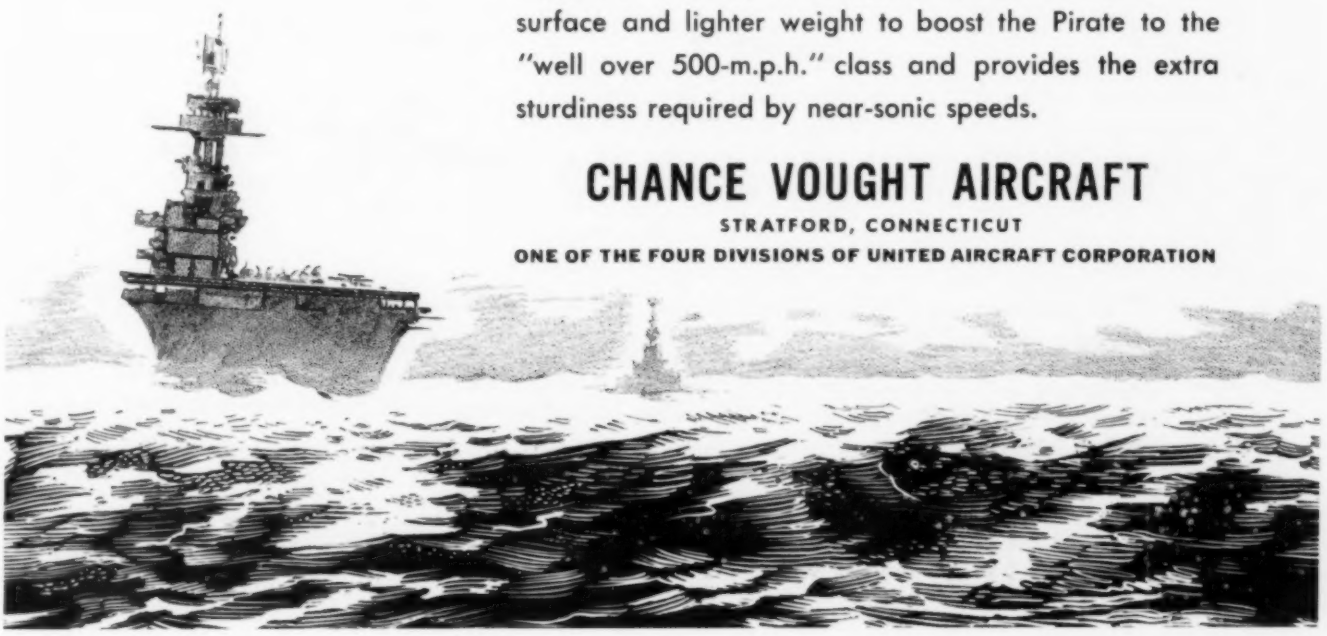


Sleekness is the keynote for the Navy's newest jet-propelled shipboard fighter, the Chance Vought XF6U Pirate, now being readied for service with the fleet. Another Vought product, the revolutionary structural material, Metalite, makes possible mirror-smooth skin surface and lighter weight to boost the Pirate to the "well over 500-m.p.h." class and provides the extra sturdiness required by near-sonic speeds.

CHANCE VOUGHT AIRCRAFT

STRATFORD, CONNECTICUT

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION



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*A one-stop service organization on the job for you 24 hours a day . . . Offering gas and oil, storage, parts and supplies, weather reports and general information . . . A complete shop equipped for first class maintenance, repair, rebuilding or conversion on every type of single- and multi-engine plane . . . Transportation always available, also facilities for hotel reservations and similar conveniences.

LOVE SERVICE COMPANY, Inc., Love Field, Dallas, Texas

CESSNAS FOR '47

(Continued from page 23)

features the same reduced noise level and instrument panel, it is upholstered throughout with Redolite leather instead of the 140's more luxurious finish. Both models 140 and 120 are powered by 85 hp. Continental engines. The 120 lacks the 140's flaps, starter, rear windows and shelf behind the seat.

Performance

SOUTHERN FLIGHT, which last June gave its readers a first-hand account on Cessna performance and flight characteristics, cruise-tested one of the first 1947 Cessnas to reach the trade area. The test run was made at recommended cruise setting of 2,450 rpm. over a measured 31-mile course. The course was flown both ways for an average ground speed of 110 mph. At 2,000 feet indicated air speed was 112 mph. or approximately 115 mph. true air speed.

Like previous models, the current Cessna is a simple plane to fly and handles well at slow speeds. During a simulated airport approach, the 140 was stalled in a steeply-banked turn with full bottom rudder and top aileron, but it returned slowly to wings-level flight with no tendency to spin. Stalling speed with power-off is still 46 mph. indicated and stall approach is gradual with plenty of warning.

Since noise level in previous Cessna's left much to be desired, the quieter cabin was a pleasant surprise. Cabin air ventilators are similar to those on the Stinson Voyager 150 and provide directional ventilation in any quantity needed. Cabin heat is more than ample and, when full open, can make the cockpit unbearably warm even in the coldest weather.

No price increases were made on the 1947 models. The Model 120 still sells for $2,695 fly-away Wichita and the 140 is priced at $3,245. To date Cessna claims more than 4,000 sales since its models went into production in 1946. The company's all-metal four-place plane, the Cessna 190, should be on the market at least by early summer.—J. J. ★ ★ ★

JUST AMONG OURSELVES

(Continued from page 10)

tion and legislation? The fixed-base operators on more than 3,000 airports throughout the nation can have more influence on the course of local and state aviation policy than any other segment of the aviation family. More usually than not the FBO can carry along with him the support of his customers in the private flying field, a figure that runs into the hundreds of thousands of people.

It's strange that the FBO and his problems are so universally ignored by the rest of the industry, especially since it would be good business, even for the generals and admirals, to pay him some mind. At the present time the National Aviation Trades Association is reorganizing under capable leadership for the purpose of unifying the fixed-base airport service operators. It will pay handsome dividends, short and long-term, to aviation generally if all of us assist in the creation and successful operation of a unified, national organization of the little businessmen of aviation.

By the same token, the FBO's can strengthen themselves, simplify their own problems and become a more respected and generally appreciated member of the aviation family by banding together in a national organization truly representative of their profession and with a constructive program working in unison with all other organized groups. Until this comes about he'll be a small voice in the wilderness, incapable of protecting himself against the inroads of local, state and national interference at a time when resuscitation, not regulation, is needed.

★ ★ ★

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LEAN OVER

(Continued from page 22)

twice as great as normal, while in a 70-degree bank it is nearly three times as great.

This increase in the load that the wings must carry raises the speed at which the airplane stalls. In a normal turn of about 30 degrees of bank, the stalling speed will be raised 7 per cent above normal. Thus an airplane which normally stalls at 40 mph. will, in a normal turn, stall at about 43 mph.; but a 50-degree bank will increase the stalling speed to 50 mph. and another 10 degrees will boost it to nearly 60 mph. From this you can plainly see that sharp turns requiring a bank of more than 45 degrees should be avoided. You should plan your flight path far enough in advance so that you will not have to bank more than 30 degrees—particularly close to the ground, as when taking off and landing.

During your course of flight instruction, you will be required to perform some maneuvers involving turns with steep banks. Remember that these are strictly training and test maneuvers which are given to prepare you for *emergencies*. Such emergencies can usually be avoided by using your head in advance. Except in training and tests, turns requiring more than 30-degree banks should never be made deliberately. In any turn, you should be prepared to recover from a stall without warning by lowering the nose and leveling the wings.

You may hear it said that no maneuver is dangerous if it is done properly. Don't forget that big IF! As your stalling speed gets closer to your actual speed in a turn, your margin of safety gets thinner. Therefore, it becomes even more important to bank the proper amount for the rate (or sharpness) of the turn. So the only way you can avoid banking steeply is to make turns wide enough to use moderate banks.

The procedure of swinging your head to look behind and all around you is even more important in turns than it was while flying straight and level. Besides helping you to relax, it will prevent collision with another plane which may be sneaking up on the side toward which you want to turn. Since a faster airplane might be crossing behind you, both sides should be included in your inspection of space. I suggest a definite routine which should be followed until it becomes a habit. Look around and back far enough to see the stabilizer *on the side opposite the way you are going to turn.* Swing your eyes forward across the nose and instruments and around to the stabilizer on the side toward which you want to turn. Start turning while you are still looking back on that side.

It is not as hard as it sounds because you have a tendency to turn in the direction you are looking, and you will be more relaxed than when you sit staring at the nose of the plane. If you are relaxed you will take advantage of the natural stability of the airplane and will make better turns. Don't be afraid to let the airplane bank as steeply as the sharpness of the turn requires, but don't try to turn any sharper than you have to. ★ ★ ★

Airmen's Calendar

Feb. 18-19 — Midwest Airport and Fixed-Base Operator Conference, Purdue University, Lafayette, Ind.

Feb. 18-20 — Magnesium Exhibit, Wright Field, Ohio.

Feb. 25-27—Louisiana Aviation Conference, Washington-Youree Hotel, Shreveport, La.

March 1-2 — Southeastern States Soaring Contest, Sanford, Fla.

March 19-20 — 2nd Region CAA Aviation Clinic, Congress Hotel, Chicago, Ill.

May 12-15 — American Association of Airport Executives Convention, Chicago, Ill.

May 26-29 — Aviation Meeting, American Society of Mechanical Engineers, Los Angeles.

CLOUDSTER

(Continued from page 15)

Either engine may be cut in or out without affecting flight control. Should an engine be lost at any time, the load is automatically transferred to the second engine, and since it drives the same propeller, it is not necessary for the pilot to trim his ship.

Douglas' first entry into the light-plane field has a wingspan of 39 ft. 9⅜ in., a height of 12 ft., and an overall length of 35 ft. 4½ in. Tricycle landing gear has a tread of 15 ft. 3 in., which, added to a low center of gravity, provides excellent ground stability.

Unconventional placing of engines and propeller behind the passenger compartment is expected to increase efficiency of wings, eliminate propeller turbulence, and reduce noise to a negligible level. The wide cabin seats three passengers in the rear and one on a separate seat beside the pilot. Entrance is through an automobile-type door on the left side.

Equipment on the experimental model includes starters, cabin heating and cooling system, dual controls, transport-type instrument panel, hydraulic landing gear, flaps and brakes, two-way radio with broadcast receiver, ash trays, cigarette lighters, glove compartment, cabin dome light and landing and navigation lights. ★ ★ ★

INSTRUMENTS

(Continued from page 19)

(7) A change in the amount of vacuum takes place whenever the air speed is changed to any great extent. A change of 0.1″ Mercury or 0.2″ Mercury is not serious.

(8) The turn indicator filter and jet should be inspected periodically and cleaned if necessary. Remember that a dusty field or excessive smoking in a ship shortens the useful life of the filter material.

Definition of Terms

Sensitivity — This term as applied to a turn and bank indicator describes the amount of pointer deflection for a given rate of turning of the airplane. A turn indicator is said to be too sensitive if, for a given rate of turning, the turn hand moves too far. If, in checking against a magnetic compass, the turn comes out "short," an over-sensitive instrument is the cause.

Damping—Damping in a turn and bank indicator applies to the rate of pointer movement. If a turn hand moves too fast it will be correctly classified as "insufficiently damped." An insufficiently damped turn hand has a tendency to oscillate when rough air is encountered or when recovery from a turn is executed.

Trouble-Shooting

For aid in trouble-shooting, typical field reports are listed here with possible causes for defective operation.

Instrument inoperative. 1. Vacuum supply failed. Pump inoperative; venturi clogged. 2. Lines not connected. 3. Needle valve in line closed. 4. Jet or filter blocked. 5. Defective instrument.

Ball bank off. 1. Ball bank not centered when installed. 2. Ship not level. 3. Vibration causing ball to climb in tube.

Instrument too sensitive. 1. Excessive vacuum applied. 2. Speed of ship excessive. 3. Not taking compass deviation errors into account when checking. 4. Defective instrument.

Instrument not sensitive enough. 1. Insufficient vacuum. 2. Ship speed slow. 3. Misalignment of or dirt in venturi. 4. Not taking compass deviation errors into account. 5. Dirty air filter. 6. Defective instrument.

Turns uneven. 1. Poor flying technique. 2. Defective instrument. 3. Not reading instrument carefully.

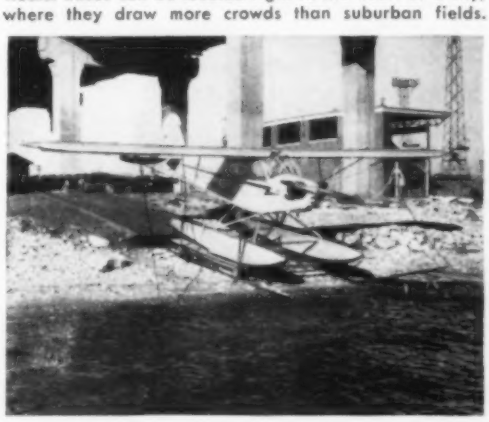
Oscillating Pointer. 1. Rough air. 2. Unstable ship (Directionally). 3. Excessive rudder pedal activity. 4. Defective instrument. ★ ★ ★

"FLOATS are building up our trade"
"We have yet to find one person who is not highly enthused after their first seaplane flight. And pilots new and old have only to get a taste of seaplane flying and they immediately become 'web-footed.' There is a profitable future in floats."
—Don Herrman, Manager, Seaplane Division, Elliott Flying Service Davenport, Iowa

This Davenport floatplane base has a runway 2,560 miles long, with ample width for all take-off conditions. Mississippi Basin alone has 15,000 miles of navigable water, with thousands of good sites for new float bases.

Float flying acceptance was quick and enthusiastic when introduced in Iowa. Response was especially strong among many pilots who found a new interest in flying, due to the fun and utility natural with floatplanes.

Almost in the cutfield of the local ball park, the Davenport Seaplane Base shows a main advantage of floats. Bases can be located right in the heart of a city, where they draw more crowds than suburban fields.



INLAND BASES MEAN MONEY—Where the Mississippi cuts through the heart of America's "tall corn" region, the Elliott Flying Service has introduced float flying to the Middle West. The results from a $600 installation: a steady volume of new business and a surge of renewed interest among pilots bored with landplanes.

As distributors both for Piper aircraft and also Edo floats, the Elliott firm is aiding other towns up and down the river in setting up float bases. They are building future plane and float sales. It's an example for all distributors to study. And the entry of this company into the float field demonstrates the ease with which any operator can tap this profitable flying market.

OTHER OPPORTUNITIES INLAND—There are many states where floats are still new. Since they give real fun in flying, floats are the answer to lagging interest among present landplane pilots. Facilities required for float flying are simple. Nature builds the airports; you merely have to add a dock or ramp.

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Pattern

By GEORGE E. HADDAWAY

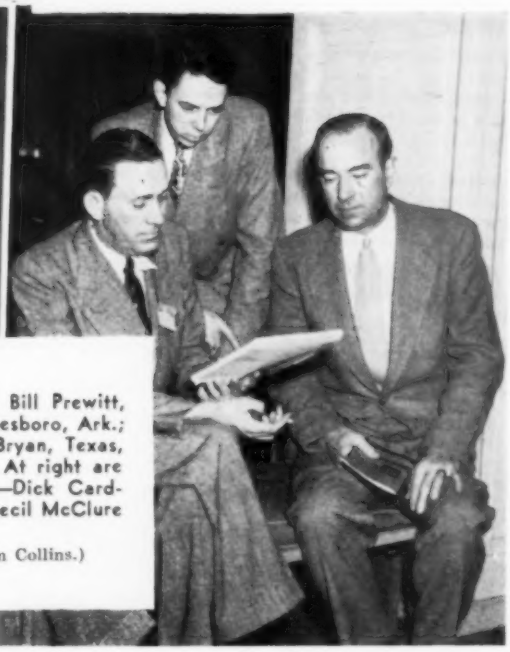
Left to right (above) are T. B. Herndon, Louisiana; Gene McGill, Alva, Okla.; George Burgess, Commerce Dept., Washington; Frank Hines, Roswell, N. M., and J. O. Womack, Dallas. Below, with Regional Weather Bureau Director Erle Hardy, are (left to right): Joe Bates, H. L. Collins, Perry Hodgdens, and Hart Bowman.

WHEN a fixed-base operator walked up to the registration desk and inquired what it would cost to buy a transcript of the Fourth Region CAA-Operators Conference at Fort Worth last month, he was told he'd get one free.

"Why, I'd pay as much as fifty bucks for that document!" he exclaimed.

We would too if we couldn't get it any other way. The record of the proceedings of the third annual meeting of Southwestern operators with CAA personnel is a unique document. There wasn't a canned speech during the entire meeting; and the southwestern operators aren't known for their ability to pull punches. Every word was recorded and every statement was spontaneous, right from the floor.

Sponsored jointly by the CAA Fourth Region and SOUTHERN FLIGHT, the third annual conference followed the precedent established three years ago which holds that every individual has the right to get up and sound off on any problem he might have. There's always an agenda which includes specific subjects and questions submitted in writing by the operators in advance of the meeting. However, provision is always made for clean-up sessions which permit Joe Blow from Geronimo to let off honest steam on non-scheduled subject matter. CAA personnel are just as outspoken, and we might add, highly respected for it.



GI flight training committee (left) included, left to right, Bill Prewitt, New Orleans; Ray Sauter, Clinton, Okla.; W. H. Arnold, Jonesboro, Ark.; and Cecil McClure, Fort Worth. Members Dick Cardwell, Bryan, Texas, and Reed Pigman, Fort Worth, were not present for photo. At right are three members of committee on non-scheduled operations—Dick Cardwell, Bryan; E. H. Pickering, Dallas, and Jay Gentry, Tulsa. Cecil McClure of Fort Worth was also a member.

—(SOUTHERN FLIGHT Photos by Tom Collins.)

n for Progress

Principal attention was given suggested revisions of civil air regulations, state aviation legislation and taxation now pending in the southwestern states, the GI flight training program, weather information services, air safety and CAA policies.

Resolutions Ask Changes

In connection with civil air regulations, resolutions were passed recommending that grading of written examinations for airmen certificates be taken out of Washington and returned to the district CAA offices in the field; that the planned monthly itineraries of CAA inspection personnel be abandoned in favor of prearranged definite dates between the inspector and the operator, with appointments based on dates when the operator will have a quantity of tests and inspections; and that flying schools with air agency certificates, employing full-time maintenance inspectors, be permitted to keep training craft operational records in office files instead of in the aircraft.

The greatest variance of opinion on any one subject cropped up in the matter of state aviation legislation, especially as regards taxation of aviation fuel. It was finally decided that each state must settle its own legislative affairs since a recommended pattern for all southwestern states could not be agreed upon. General agreement was evidenced in two resolutions which were accepted by the majority. These recommended that enabling legislation should be passed in all states for the Uniform Municipal Airports Acts, Uniform State Airport Zoning Act and the Uniform Airport Condemnation Act. The conference also agreed that the several states should have legal authority to prevent and penalize hazardous flying. They agreed that state aviation commissions have definite functions to perform for the benefit of aviation development but would not go beyond that statement and specify what those functions should be. Additionally, the majority recommended that if taxes were imposed on aviation in any form, the money should be spent on aviation development. Two resolutions failed to satisfy a large number of those in attendance and practically everyone left the meeting with the realization that this knotty problem had to be solved by themselves within their own states.

End of GI Confusion Sought

After an all-day session with five officials of the Veterans Administration who were thoroughly acquainted with the GI flight training program, the group admitted that considerable confusion and delay was involved in the contracts, interpretation of such contracts and standardization of requirements as set forth in CAA Manual 50. The resolution called for carefully-planned meetings with representatives from various types of flight training schools, the Vets Administration, and the CAA for working out all problems contingent on the present and future contracts. If such meetings failed to iron out present difficulties on the state and regional level, the GI Flight Training Committee is empowered to take its problems to higher authority in Washington.

Something was done about the weather. The chief of the U. S. Weather Bureau was petitioned to take such steps as necessary to improve and increase weather reporting facilities and services rather than reduce the services as now is in evidence. The group hopes to bring pressure to bear on all government officials responsible for recent reductions in weather services and stations and to provide all help possible to Weather Bureau officials in their desire to give adequate service.

The group went on record against national standardization of any fixed night lighting equipment other than of the flush type due to the hazards of collision with elevated standards. They pointed out that 38 per cent of all aircraft accidents occurred during taxiing operations and that fixed, elevated standards would add to this figure.

With reference to CAA Part 42 covering non-scheduled regulations, a resolution was unanimously adopted recommending that the following provision be modified: "when passengers or cargo picked up at points other than where the principal operations office is located, the first pilot shall before starting flight complete records required by CAR 42.31 and 42.30 and cause them to be mailed to the princi-

Co-chairmen of Fort Worth conference (right) George Haddaway, editor of SOUTHERN FLIGHT, and Bill Berry, CAA, shown checking lists with Mrs. Laura Whitt, conference secretary. Oklahomans at the conference, led by John Burke of Oklahoma City, included the group below. Left to right are Burke; Al White, Oklahoma City; Gene McGill, Alva; Al Young, CAA, Oklahoma City; Max Pitcher, Tulsa; Mrs. John Burke; Shelby Kritser (he's from Amarillo but the photographer posed him before he caught on); Harold Ownby, CAA, Tulsa; Mr. and Mrs. Ray Sauter, Clinton; Bill Sherer, Oklahoma City, and J. E. Wagner, Tulsa.

FLYING STATION WAGON. With back seats removed (above) Stinson's station wagon version of the Voyager 150 is said to carry a pilot and 600 pounds of baggage, equipment, tools or supplies. This version was designed especially for flying farmers, ranchers, sportsmen, and salesmen.

pal operations office." It was recommended that the pilot be permitted to submit the flight record upon his return to the principal operations office. The same resolution recommended that single-engine aircraft under 5,000 pounds gross should not be required to carry operations limitations or manuals. Limitations rather should be incorporated on instrument markings and small dash placards.

Wright Commended

Miscellaneous resolutions included one praising CAA Administrator T. P. Wright for his exceptional leadership in the administration of civil aeronautics on the Federal level. It stated that the entire CAA organization had been materially strengthened during 1946. Another resolution recommended that Gene McGill, of Alva, Oklahoma, past president of the National Flying Farmers Association, be considered for appointment to the Administrator's Non-Scheduled Advisory Committee. The operators also went on record supporting the purposes and plans of the reorganized National Aviation Trades Association, pledging support to the Association and the efforts of Bevo Howard and Harry Meixell. Another resolution recommended that state departments of education, colleges and public school systems develop comprehensive programs of air age education as an integral part of the total education system.

Washington co-operated again this year by sending George Burgess from the office of the secretary of commerce, Spike Alberry from the Civil Aeronautics Board and Ernie Hensley, assistant deputy administrator of safety regulation, CAA. Burgess made the only assigned talk, appearing before the group at their annual banquet. His address, revealing a keen insight into the operator's problems, was well received. He, along with the other two Washington officials, contributed to the success of the sessions by answering questions and explaining reasons behind specific CAA and CAB policies and regulations.

Perhaps the most encouraging aspect of the meeting was the noticeable lack of any serious friction between operators and the CAA inspection personnel. The Fourth Region, comprising the states of Arkansas, Louisiana, Oklahoma, New Mexico and Texas, was not a very happy territory four years ago before the meetings were held. A portion of the present high degree of co-operative spirit and the new psychology which prevails certainly can be attributed to the Ft. Worth get-together. It's a psychology that grants both operator and inspector are ordinary human beings, working pretty much for the same things in aviation, subject to error, capable of being hard headed and unreasonable at times, but without the erstwhile "cop and criminal" attitude that characterized past years when operators and private fliers were more often than not at loggerheads with CAA personnel and practices.

The Fourth Region annual meetings might well be adopted by other CAA regions, especially now that NATA is reorganizing. The Second Region held a similar meeting last September in Atlanta, with operators present from Tennessee, South Carolina, Alabama, Mississippi, Georgia and Florida. The Ft. Worth conferences, in so far as the airport service operator is concerned, offer considerably more red meat than national aviation conferences and other all-inclusive meetings which neither permit microscopic analysis of the operator's vital problems nor provide a sounding board for his solution to those problems. Yes, the unique pattern established by the Fourth Region meetings might well be followed throughout the nation. The little business men of aviation have been silent too long, especially as regards the practices and policies that can make or break them.

The January conference attracted more than 300 registrants. What has the sponsors worried is how to take care of the mob expected at next year's sessions. ★ ★ ★

CHIEF EXECUTIVE WANTED

Manufacturer of outstanding new 4-place all-metal aircraft desires to fill opening in position of presidency with man of proven management experience and ability. Opportunity exists for unlimited expression of original and creative administrative ideas. Production engineering and tooling complete, prototype to be tested in short time. Substantial investment in ownership stock of company required.

Box 106, SOUTHERN FLIGHT
P. O. Box 750, 1901 McKinney Ave.
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THAT NEIMAN-MARCUS TOUCH. When Henry C. Beck, Dallas and Atlanta contractor, wanted a distinctive interior for his twin-engine Beechcraft, he called in Margaret Sedwick, decorator for Neiman-Marcus specialty store. Mrs. Sedwick used warm beige and coppery tones with brilliant flashes of red for accent. An ostrich skin treatment, in reality a photographic negative process known as "Di-Noc," was used on walls and ceiling.

WHAT'S NEW

Luscombe Airplane Corporation of Dallas has announced a five cents per share dividend on 546,908 shares of outstanding stock to be paid on February 12—significant news at a time when so much gloom is talked.

Grounding of all Navions by the factory in late January marked a new high in manufacturer-dealer-consumer relations. Discovering that a few pieces of improperly heat treated material had inadvertently been used in production of a pin in the Navion's nose wheel steering arm assembly, the North American officals wired all dealers and customers to temporarily ground Navions until new pins could be installed. Replacement parts were air expressed to factory dealers throughout the country. Dealers were to install the parts without cost.

Deputizing airport operators to help state and local officials enforce stronger laws against reckless flying was recommended by Oklahoma Aviation Association's legislative committee in a January 22 report at Norman. The committee also urged that the present Oklahoma Aviation Commission receive income from any taxes imposed upon the aviation industry. Gasoline tax should not exceed one cent a gallon at any time, the committee stressed, and recommended the tax be paid at source to eliminate present burdensome and expensive procedure of collection. More satisfactory ad valorem taxes were also demanded and it was suggested that Oklahoma obtain legislation similar to that recently passed by Louisiana exempting airplanes, airports, hangars and facilities for ten years.

FIRST FAMILY OF THE AIR

Three generations of an illustrious family are represented here.

At left is the durable Boeing B-17 Flying Fortress. Next is the first of the global bombers, the Boeing B-29 Superfortress. And towering over both is the double-decked Boeing Stratocruiser, the world's first true super-transport.

Every aerodynamic advance, achieved by Boeing in 30 years of leadership in building great aircraft is embodied in the Stratocruiser. It has all the stamina of its fighting predecessors plus matchless spaciousness.

With low direct operating cost, the 80-passenger, 340-mile-an-hour Stratocruiser is designed for ease of servicing and maintenance. Every important part is directly accessible and its four 3500-horsepower engines are interchangeable and can be replaced quickly.

The Stratocruiser is remarkably easy to fly because of simplicity of control arrangement. And the control cabin is a pilot's dream—roomy and comfortable, with unequalled visibility. Boeing Airplane Company, Seattle, Washington; Wichita, Kansas.

Boeing is building fleets of Stratocruisers for these forward-looking airlines:

PAN AMERICAN WORLD AIRWAYS

SCANDINAVIAN AIRLINES SYSTEM

NORTHWEST AIRLINES

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BOEING

STRATOCRUISER

JUST WATCH THEIR DUST . . .

. . . Evan and Isabel Rees, Humble Aviation Products Dealers of McAllen, are operators of South Texas Aero Dusters. Located at McAllen Municipal Airport, the Reeses have built a reputation for outstanding service to transient pilots . . . service such as constantly-available transportation to town.

They're busy people — the Reeses. Evan does much of the flying in his dusting business. Both he and Isabel act as instructors in their approved flying course. And they offer complete aircraft overhaul by A&E mechanics.

Says Evan, "The low flying in dusting operations is hazardous, so quality gasoline is a 'must' with us. We use and recommend dependable Humble-Esso Aviation Gasoline and Lubricants — the products that are *first with flyers* in Texas."

HUMBLE OIL & REFINING COMPANY

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Mayan Bar M Ranch Airport	Bandera
Belton Airport	Belton
Bewick Flying Service	Big Lake
U & S Flying Service	Big Spring
Big Spring Mun. Airport	Big Spring
Breckenridge Flying Ser.	Breckenridge
Frontier Airmotive, Inc.	Brownsville
Border Aircraft Service	Brownsville
Brownwood Municipal	Brownwood
Coleman Flying School	Coleman
City of Corpus Christi	Corpus Christi
Crane Airport	Crane
Southwest Airmotive	Dallas
Clearview Airport	Dallas
Denver City Municipal	Denver City
Hall Flying Service	Eagle Pass
Eagle Field	Fairfield
Pecos County Airport	Fort Stockton
Globe Aircraft Corp.	Fort Worth
Skyview Airport	Fort Worth
A. C. Flying Service	Galveston
Lynch-Parrish Aircraft Ser.	Galveston
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Howard Humphrey	Goose Creek
Aero Enterprise, Inc.	Graham
Rutherford Flying Service	Greenville
Ferguson Aviation	Harlingen
Byrn's Sky Ranch	Hillsboro
Sky Travel, Inc.	Houston
Boynton Flying Service	Houston
Cliff Hyde Flying Service	Houston
Erwin-Newman Co.	Houston
Minor Stewart Airport	Houston
Sportsman's Field	Houston
Sam Houston Airport	Huntsville
Iraan Airport	Iraan
Jacksonville Flying Serv.	Jacksonville
Kerrville Flying Service	Kerrville
Frank Hogg Airport	Lamesa
International Aircraft Sales	Laredo
Lufkin Flying Service	Lufkin
South Texas Aero Dusting Co.	McAllen
Ralph Stephens	Marlin
McCreery Aviation Co.	Mercedes
Mexia Flying Service, Inc.	Mexia
Midland Commercial Airport	Midland
Hopson Putz Air Service	Mission
Monahans Municipal Airport	Monahans
E. T. Crawford Fly. Serv.	Nacogdoches
Bowles and Tilbert	New Braunfels
Old Ocean Airport	Old Ocean
Mayhew Aerial Service	Olney
Brownair, Inc.	Orange
R. L. Tanner	Pt. Lavaca
Gorman Fox	Raymondville
Lane Airpark	Rosenberg
Saginaw Airport	Saginaw
San Angelo Mun. Airport	San Angelo
Williams Aircraft	San Antonio
Monroe-Witt Flying Serv.	San Antonio
Davis Airport	San Antonio
Schulenburg Airport	Schulenburg
Silver Dollar Flying Service	Seguin
Seminole Flying Service	Seminole
Seymour Flying Service	Seymour
Frank R. Kniffin	Sinton
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W. J. Worsham	Taft
Gage Field	Teague
Reed's Air Service	Temple
Mathew Wallace	Terrell
Gulf Coast	Texas City-La Marque
City of Tyler	Tyler
Carter Flying Serv.	Velasco-Freeport
Jack V. Newland	Waco
David Setter	Weslaco
Wharton Municipal Airport	Wharton
Stoddard Aero Service	Wink
J & W Flying Service	Winters

Quick disconnection of control rods, speeding up removal and installation of power plants and assemblies, are said to be possible through use of a new device manufactured for and distributed by Durham Aircraft Service, Inc., of Flushing, N. Y., Detroit, Mich., and Tulsa, Okla. Called the Purdy Quick Disconnect, the fitting can be opened or closed by a finger twist of the locking collar and eliminates the time-consuming operations of removing clevis pins, bolts, nuts, and locking wire. It also enables faster readjustments of control rod length and has been successfully incorporated in the control assemblies of the Rainbow, Thunderjet, and both the Piasecki and Kellett helicopters.

A parking brake kit marketed by Scott Aviation Corporation of Lancaster, N. Y., is said to make parking brakes available for any lightplane equipped with hydraulic brakes. . . . Handling of small parts and pieces should be easier with a new aluminum hand vise introduced by the Chicago Tool and Engineering Company, Chicago, Ill. . . . Marman Products Co., Inc., of Inglewood, California, is marketing an all-purpose pipe-leak clamp called the Patchmaster designed to stop leaks on low or high pressure pipe ranging in size from ½ to 4 inches in diameter. The clamp has been tested at 800 pounds per square inch without leaking. . . . Bendix recently introduced a fast-acting parts cleaner under the trade name "Bendix Metalclene."

SCENES AT ADMA's 4th Annual meeting in Chicago. TOP, left to right, R. M. Durham, Durham Aircraft Service Co.; R. B. Kenty, Air Associates; A. J. Weatherhead, Jr., Weatherhead Co.; Col. A. E. R. Peterka, Lamson and Sessions Co.; W. B. Hawkins, Air-Parts, Inc.; A. W. Whitaker, A. W. Whitaker Co.; and H. F. Wood, Aero Service and Supply Co. RIGHT, A. J. Weatherhead, Jr., new ADMA president, accepts gavel from W. F. Scott, Jr., Supply Division. JUST BELOW, A. M. Recker, registers. ADMA officials watching him are W. F. Scott, Jr., former president; H. Donald Richards, secretary; George A. Fernley, executive secretary; Walter B. Hawkins, vice president; and Rose Gagen of the Chicago Convention Bureau. BOTTOM, James Riddle, Hallicrafters Co.; G. B. Van Dusen, Van Dusen Aircraft Supplies, Inc.; and Ray Vandegrift, Hartzell Propeller Co.
—(SOUTHERN FLIGHT Photos by Edgar Jaffe.)

DEALER NEWS

An owner's service policy, backed by a manufacturer's warranty and including a free 25-hour inspection, has been announced by the Stinson Division of Consolidated Vultee Aircraft Corporation. Under the manufacturer's warranty, any service necessary to Stinson-built components can be made within the warranty period at the factory's expense at any Stinson dealership in the United States or Canada. The warranty period is 90 days from the factory flyaway time or for the first 100 hours flying time, whichever comes first. A change of service clause is also included in the service policy.

Flying models of the Bonanza, Ercoupe, Seabee and Voyager 150 are used by former Lt. Col. Ken A. Willard in a novel 30-minute talk designed to help sell personal aviation to the general public. The Parks Air College representative discusses private flying as it is today without reference to visionary helicopter-in-garage days often predicted for the future. Pointing out that private flying is not as demanding as military airmanship, Willard shows movies he made during the army's training program and then shows the simple maneuvers required for a private pilot's license. During the third portion of his talk, Willard emphasizes that modern personal planes actually fly themselves while their pilots merely position them for a desired maneuver. To illustrate this point, he makes scale models take off, circle over the audience, and land back on the lecture table.

More than 800 hours of soaring time have been logged at El Mirage Dry Lake's 640-acre airport since it was acquired from WAA in early 1946 by Briegleb Soaring School of Van Nuys, Calif. Located near a 650-foot ridge overlooking the dry lake, the airport was used during the war for Army cargo glider training. The Briegleb organization provides bunks for overnight visitors at $1 a day.

A conference for airport executives and fixed-base operators will be inaugurated February 18 and 19 at Purdue University. Known as the Purdue Airport and Fixed-Base Conference, the meet will be the first of its kind at Purdue and one of the first in the country. The program will deal with problems and future outlook for both small and large airports. Speakers will include K. B. Woods, associate director of research in civil engineering at Purdue and an authority on airport soils; Jerome Lederer, Aero Insurance Underwriters executive, who will speak on "Safety Through Flight Training," and Beverly Howard, president of NATA, who will talk about the future of fixed-base operations. Francis Hartman, instructor in Purdue's Public Safety Institute, will discuss "Airport Fire Prevention," and Ray Grimes, president of Indiana Aviation Trades Association, will cover problems of class 3 and smaller airports.

Super Cruiser operating costs averaged 2.33 cents per mile during a 12-state 3,750-mile sales tour made recently by R. T. Vandergrift and E. G. Lentz of Aviation Corporation's Lycoming Division. The trip was made in 35 hours and 40 minutes flying time at an average ground speed of 105 mph. During the two-week tour, the representatives stopped in Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Tennessee and Pennsylvania. Gas consumption averaged 5.75 gallons per hour.

BRIEFLY SPEAKING—

A free parking lot for airplanes, believed to be the first of its kind, has been opened at Teterboro, N. J., by Air Associates, Inc., for the convenience of customers and visitors arriving by air. . . . A novel idea in customer relations is "The Compass," a booklet distributed to transient customers and their passengers by Southwest Airmotive of Dallas. The pocket-sized book contains a diagram of Love Field, a chart of local radio facilities, field regulations, telephone numbers for taxis, hotels, airlines, airport officials, and emergency home phone numbers of all SAC shop superintendents. . . . A new twist was introduced at Kansas City recently when 35 private planes, bearing Shriner emblems and piloted by Shriners, flew over a parade route . . . SAETA airline of Colombia is probably the first foreign airline to be assembled in the United States. The Aero Corporation of Atlanta, Ga., contracted to purchase and convert surplus DC-3's for SAETA. Spanish language signs were stamped and printed and the converted DC-3's were loaded with spare engines, parts, radios and miscellaneous ground equipment. SAETA pilots then took over and flew the "airline" to Colombia where it began operation. . . . Executives of Lever Brothers' well-known Pepsodent Division recently covered 5,000 miles by company plane in one week. Utility of the company's Lodestar was well emphasized by James A. Barnett, vice president and general manager for Lever Brothers, who said, "In five days by airplane we can cover the entire country and meet with every Pepsodent sales representative. This same trip by train would take anywhere from six to eight weeks." . . . TWA is using a 300-ft. long "washing machine" to speed up cleaning of airplane engine parts at its Kansas City overhaul base. Parts move on a conveyor system which takes them through a pre-cleaner solution, through a long primary soak tank, an intermediate rinse, then to a secondary soak tank followed by a three-stage post-washer. Following this parts requiring grit blasting are sent into blast cabinets and steel parts needing buffing go to special vapor blast booths. Three men operate the system and turn out the same volume of engine parts formerly handled by a crew of 40. . . . A new record time for the flight from Honolulu to Los Angeles was recently set by a PAA Constellation. . . . Flying at 17,000 feet, the clipper made the trip in 8 hours and 49 minutes—an average ground speed of 299 miles per hour.

3 Controls in One

NEWEST device to simplify flying by operating rudder, aileron and elevators through a single control wheel, is known as "Tri-Control," and is shown being explained (above) to Jean Guenther of Cleveland by inventor Walter Beetle (left) and George Houk, president of Dayton Aircraft Products.

The control is distinctly different from two-control systems and there is no linkage between rudder and aileron. Controls may be crossed and slips executed as in conventional planes. Houk, whose firm manufactures Tri-Control, said full particulars must necessarily be withheld until patents are granted.

Demonstrations are being made for leading aircraft manufacturers, including North American, Luscombe, Aeronca and Waco.

PERSONALLY SPEAKING—

Republic Aviation Corp. started off the New Year by elevating former president ALFRED MARCHEV to chairman of the board and electing MUNDY I. PEALE, formerly vice president and general sales manager, to presidency of the corporation. . . . NORMAN NICHOLSON, formerly vice president in charge of sales for Globe Aircraft Corporation, is manager of dealer sales for Pacific Airmotive Corporation. . . . WILLIAM H. KLENKE, JR., formerly New York manager for Consolidated Vultee, is now general sales manager for the company's Stinson Division. . . . JOE JACOBSON, well known racing pilot, has resumed his operations at Kansas City's municipal airport after four years in the AAF. . . . H. A. (BUZZ) HERSHFIELD, JR., former sales manager of Bellanca Aircraft Corporation, is handling sales and management for Jacobson's flying service. . . . Five new Universal C. I. T. Credit Corporation offices were opened as 1946 drew to a close. . . . Managers selected to head up these new offices were: W. L. KLUM, Battle Creek, Mich.; W. R. ALFORD, Sheffield, Ala.; R. G. CREELY, Kansas City, Mo.; GORDON E. KUNZ, Mason City, Ia.; and HOWARD EDDY, Inglewood, Calif. . . . HERBERT J. CONOVER, formerly with the service department at Douglas Aircraft, will head the west coast office of Greer Hydraulics, Inc.

WILLIAM M. THOMPSON, former executive for Parks Aircraft Sales & Service, Inc., has been named administrative assistant of Brayton Flying Service, Inc., at St. Louis, Mo. . . . E. S. SAFFORD, export sales manager of Beech Aircraft Corporation, is making a six weeks sales and service visit to Beechcraft distributors and customers in Central and South America.

2 ADVANTAGES *you get in the* HARTZELL HYDRO-SELECTIVE PROPELLER

1. SOLID HARTZITE PLASTIC BLADES

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what they mean to the flyer . . .

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This truly great propeller is available on the Republic Seabee (4-place amphibian) and the North American Navion (4-place land plane). It will soon be available for replacements.

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Probes Spur Safety Drive; Approach Procedures Altered

The aviation industry focused its attention on safety last month as both houses of Congress scheduled investigations of the airlines, the Civil Aeronautics Board issued an amendment to the instrument approach procedure, the Civil Aeronautics Administration disclosed plans for increasing ceiling and visibility minimums for four-engined aircraft, and the Air Transport Association decided to take its story to the public in a series of advertisements detailing the "real truth" about air safety.

The Senate led off the congressional probing on January 13 when its Interstate and Foreign Commerce Committee summoned members of the Civil Aeronautics Board to an "executive session" conference. This was followed by the appointment of Sen. Owen Brewster of Maine as chairman of an aviation subcommittee to investigate the safety of air travel and the causes of recent plane crashes. Sen. Brewster stated that hearings would be held soon, and added that there would be close liaison with the Senate Appropriations Committee so that there would be no economy in appropriations at the expense of air safety.

Chairman James M. Landis of CAB submitted figures to the senators showing the chief causes of all major U. S. airline crashes last year both at home and abroad. Crashes incident to landing approaches accounted for 15; striking mountains, five; overshooting field, four; fire in air, five; structural and power plant failure, 14; landing gear retraction failure, eight; mishandling controls, six; air collision, one, and miscellaneous including weather, 18.

On the House side, Rep. Charles A. Wolverton, N. J., Chairman of the House of Interstate and Foreign Commerce Committee, introduced a resolution calling for a full-fledged Congressional investigation of airline accidents, and asking for powers of subpoena to pursue the investigation.

Even while Congress was preparing its investigations the CAB and the CAA took two important steps to increase air safety. The first was an emergency amendment to the Civil Air Regulations relative to approach procedures. It provides that "No instrument approach procedure shall be executed or landing made at an airport when the latest U. S. Weather Bureau report for that airport *indicates* the ceiling *or visibility* be less than that prescribed by the Administrator for landing at such airport."

The old regulation did not take visibility into account, and permitted pilot discretion when the ceiling was not actually "measured" with a measuring device.

The second CAA-CAB action was announcement of a plan to establish higher ceiling and visibility requirements for DC-4 and Constellation equipment, and to undertake a review of present twin-engine minimums. According to a letter sent from Washington headquarters to all CAA regional administrators, "Ceiling minimums (for four-engined aircraft) shall be high enough to permit all turns necessary to reach a position for a normal approach to any runway to be executed clear of clouds and at least 300 feet above all obstructions in the area over which such turns are accomplished. In no case shall this ceiling minimum be less than 500 ft. above the established elevation of the airport. Such areas should normally extend two miles from the boundary of the airport, but not include areas over which flight is prohibited nor areas containing prominent obstructions which can easily be seen and avoided."

The same letter set visibility minimums at at least one and one-half miles, and a higher minimum may be required if deemed necessary due to unusual terrain features, obstructions in the maneuvering area, or inadequate lighting.

Lower minimums may be established for straight-in approaches, but only when a rate of descent not greater than 500 ft. per minute and speed in still air not less than 120 mph. will bring the plane from its final approach altitude over the marker to zero altitude at the near end of the runway without change of direction of more than 30 degrees. Even in such cases ceiling minimum will be at least 400 ft. and visibility one mile.

Piper, Aeronca, Cessna Lead Lightplane Output

Piper Aircraft Corp., with 7,780 deliveries, Aeronca Aircraft Corp., with 7,555 and Cessna with 3,959 were America's top lightplane producers during 1946, according to an Aircraft Industries Association tabulation showing 14 companies delivered 31,594 lightplanes worth $88,172,000 during the year. Beech Aircraft Corp., with $18,701,000 worth of deliveries but only 299 aircraft deliveries, was tops in dollar volume.

The fourteen firms were ranked as follows by units delivered: (1) Piper 7,780, (2) Aeronca 7,555, (3) Cessna 2,959, (4) Taylorcraft 3,151, (5) Ercoupe 2,503, (6) Luscombe 2,490, (7) Stinson 1,436, (8) Globe 1,054, (9) Temco (Globe & Fairchild contractor) 563, (10) Beech 299, (11) Bellanca 288, (12) Republic 196, (13) Funk 174 and (14) North American 146.

Valid Certificate Must Be Carried While Piloting

Effective Feb. 15, no person shall pilot an aircraft in the U. S. unless he holds a valid CAA or foreign pilot certificate with proper ratings and all pilots must have their certificates in possession at all times while piloting an aircraft. This requirement was issued last month by the Civil Aeronautics Board as an amendment to Part 43 of the Civil Air Regulations. Certificates must be presented upon request to any CAA inspector or state or local law enforcement officer.

Portal Pay Suits Could Bankrupt Aircraft Industry

The nation's aircraft industry literally could be wiped out if claims in portal-to-portal suits are upheld, E. E. Wilson, chairman of the Board of the Aircraft Industries Association, has told a Senate Judiciary Committee subcommittee conducting hearings on legislation to bar the suits.

He cited examples where claims for even six minutes' portal pay per day would exceed the entire capital of the companies involved, and presented an estimate based on suits already filed which showed that the 12 largest companies faced portal claims for $461,500,000. These claims, he said, were "greater than the entire cash and securities of the companies," were "in excess of their entire working capital," and were more than their net worth.

$10,000 Helicopter May Become Reality if S-52 Orders Increase

Sikorsky Aircraft Division of United Aircraft Corp. hopes to market its new two-place S-52 helicopter for under $15,000, and if production reaches a sufficient number, "there is talk in some quarters of selling the model for 'under $10,000'," according to Walter Paige in *American Helicopter*. . . . Bell Aircraft Corp. has announced the sale of 27 Model 47-B helicopters for an aggregate of $675,000. This represents only the initial consignment, not the total backlog. . . . Formal organization of a Helicopter Council of the AIA with Lawrence D. Bell as chairman has been announced by the Aircraft Industries Association. Representatives of Bell Aircraft Corp., Firestone Aircraft Corp., Kellett Aircraft Corp., McDonnell Aircraft Corp., Sikorsky Aircraft and the AIA attended the organizational meeting.

Earl Rowland, Dallas pilot who bought a surplus Army helicopter, found his investment a profitable one last month when United Artists gave him a 20-hour contract at $100 an hour to paint "The Outlaw" on the sides of the machine and fly the film to the 19 suburban theatres where the picture was to be shown.

Greyhound Bus Co. is taking its two Sikorsky S-51 helicopters on a tour of cities and towns along its proposed helicopter routes. Five and ten minute flights at low altitudes are being given to civic and business people. . . . Carley Realty, West Newton, Mass., has purchased a helicopter landing field adjoining its office building for the benefit of out of state clients.

Arizona Helicopter Service is now using a Bell Model 47 to transport guests from Sky Harbor Airport, Phoenix, to Castle Hot Springs Hotel, 67 miles away by road. The trip takes 30 minutes. . . . United Air Lines has ordered a Sikorsky S-51 for engineering analysis and operational training. It expects delivery in May. United has applied for helicopter airmail routes linking 32 communities in the Chicago area.

The owners of Platt-LePage Aircraft Corp. have placed the company in voluntary liquidation. The company built two twin-rotor machines for the Army, one of which has been sold as surplus to Helicopter Air Transport, Philadelphia, and is now being refitted at Camden, N. J., for commercial work.

$9,980 Set for Waco Pusher; Parks Named 6-State Distributor

Waco Aircraft Co. has appointed Parks Aircraft Sales & Service to distribute its new four-place Aristocraft in Missouri, Illinois, Kansas, Indiana, Iowa and Nebraska. At the same time Parks Aircraft announced the signing of a new contract with Engineering & Research Corp. to distribute the Ercoupe in Missouri, Illinois, Indiana and Kansas.

The Parks announcement revealed for the first time that the Aristocraft will be priced at $9,980 F.A.F. It stated further that engineering data claims the plane will have "top speed of 154 mph., cruising speed of 135 mph. and landing speed of 57 mph.," all at sea level. Service ceiling is given as 17,500 ft., and range as over 600 miles.

Standard equipment on the Aristocraft will include: starter, generator, two-way radio, controllable and reversible propeller, airspeed indicator, compass, sensitive altimeter, bank and turn, rate of climb, clock, tachometer, oil pressure, oil temperature, fuel pressure and fuel capacity gages, ammeter, manifold pressure gage, cylinder head temperature gage, ignition lock, instrument spotlights, navigation lights, landing lights and dome light.

Army Air Cadet Training Resumed; Enlisted Men Fill Initial Quotas

Reopening of the aviation cadet pilot training program has been announced by the Army Air Forces, with first quotas to be filled by qualified enlisted men. The new program will extend over an indefinite period with larger quotas scheduled each year if funds are available. The 1947 program calls for a 52-week instruction course.

To be eligible for admission to the pilot training courses, an enlisted man must be on duty in the continental United States, unmarried, between the ages of 18 and 26, of excellent character and health, have at least two years of his present enlistment remaining, have graduated from a four-year high school course, and be able to pass mental and aptitude qualifying examinations.

In the event that quotas are not filled by AAF enlisted men, former aviation cadets who had entered training during 1944 and 1945 and whose training was terminated by the end of the war may be eligible to re-enter training this year.

Tax Refunds Reduce Piper's Loss for 1946 from $365,000 to $26,000

Piper Aircraft Corp. has reported to its stockholders that operations for the fiscal year ending September 30, 1946, resulted in a loss of $365,437.09, but that after applying estimated tax refunds of $339,000, the net loss charged against earned surplus was $26,437.09.

The company attributed the loss generally to reconversion problems including a shortage of experienced employes, and to interferences in production. For example, during the first quarter only 936 units were produced as against 6,487 for the entire year and 1,016 for October, first month of the 1947 fiscal year. In January 512 units were manufactured at an estimated net profit of $27,000, but in February the entire plant was shut down due to the steel strike. Material shortages enhanced by strikes continued to plague the company during the summer, and August with 819 units was the first month in which full scale production was realized.

Despite delivery of 5,842 Cub Specials and 544 Super Cruisers during fiscal 1946, Piper reported its backlog of unfilled orders amounted to $26,000,000 on September 30, 1946, as against $10,000,000 on September 30, 1945. This represented orders for over 5,000 Cub Specials and 7,000 Super Cruisers.

Piper said that plant facilities and number of employes during the opening months of fiscal 1947 were greater than at any time in the company's history.

New NAA Award

The National Aeronautic Association has announced plans to award life memberships in recognition of the most outstanding contributions to aviation by individuals. Recipients will be nominated each year by the NAA board of directors, and those approved will be honored at a special presentation dinner in Washington, D. C.

Stinson Works at Peacetime High of 1,400

The Stinson Division of Consolidated Vultee Aircraft Corp. entered 1947 with record peacetime highs for employment, production, payroll and sales, according to William H. Klenke, Jr., general sales manager. Klenke said there were approximately 1,400 people on the payroll at the start of the year, and attributed Stinson's reversal of the present general trend in the industry to the inherent utility of the Voyager 150 and the Flying Station Wagon. Many other lightplane manufacturers have reduced payrolls.

PERSONALS

WILLIAM A. MARA has been appointed director of advertising for Bendix Aviation Corporation, assuming the duties of HERBERT L. SHARLOCK, who has been granted a leave of absence. . . . WILLIAM R. RYAN has been appointed chief engineer of the Edo Aircraft Corporation. Ryan is a commercial pilot and a veteran aeronautical and electronic engineer. . . . ANDREW F. HAIDUCK has been named general manager of the Duramold Division of the Fairchild Engine and Airplane Corporation. . . . EUGENE W. NORRIS, chief engineer for Luscombe Airplane Corporation, has been appointed vice president in charge of engineering. . . . ROBERT W. CORNELL, comptroller of the Parker Appliance Company, was elected to a vice presidency at a recent Board of Directors meeting. . . . E. K. FOSTER, factory manager, and A. E. ABEL, chief engineer of Bendix Aviation Corporation, recently received highest civilian honors from the War Department for outstanding achievement in the development of radar during World War II. . . . ROBERT T. JONES, 36-year-old practical theorist in aerodynamics for NACA, received the 1946 Sylvanus Albert Reed Award given by the Institute of Aeronautical Sciences.

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JH4ER
JH5F
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SF14LU-8
SF14LC-7
SF14LC-8
SF9LU-3
SF9LU-7
SF9LU-8

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PD-12H2, PD-12K6
PT-13G1, PT-13G5
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PROP. FTHR. PUMPS
54772-2, 280-BHC
54772-21

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MG-149H, MG-153F

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Globe Survival Seen if Continued Swift Sales Allowed

Confident of successful reorganization if supported by major creditors, George J. Newman, co-trustee and general manager of Globe Aircraft Corp., said the Fort Worth venture had delivered approximately 1,100 Swifts and had lowered manufacturing costs to the point where a sales price reduction was planned when three creditors filed Federal Court action last month for reorganization. Over-anticipation of the market left Globe with greatly-exaggerated inventories and tooling when the lightplane market broke last fall, Newman said.

A meeting of major creditors was scheduled for Feb. 12, at which Co-trustee Newman and Wirt Norris, Fort Worth oil operator named trustee by the court, will present their plan to salvage the concern through continued operations. The plan is based on confidence that success can be attained within two or three months through the sale of additional Swifts, after which operations would be resumed on a current basis.

"If permitted to continue the sale of Swifts, we could pay urgent debts and restore operations on a profitable basis," Newman told SOUTHERN FLIGHT. "Globe is still assembling one airframe a day, without engine or propeller, from stored parts of which there is sufficient quantity for two or three months' production. It is also expanding its service to dealers and Swift owners, exporting Swifts and turning out a small volume of subcontract work. The working force is down to about 125 employes.

"Existing assemblies and parts can be marketed at normal values if we are given a chance to assemble them into completed airframes, each of which, with only $1,100 or $1,200 for engines and propellers, can be utilized as a useful airplane."

Newman said Globe is currently shipping $18,000 to $20,000 worth of Swift parts monthly and that this, plus revenue from exports (chiefly to Latin America and South Africa), subcontract work and collections, is meeting operating expenses. There are 21 Swift 125's on the double assembly line inside the factory.

"Whatever happens we are going to do everything possible to assure Swift owners a supply of parts for maintenance in the field," he said. He has drawn up details of an alternate plan, to be offered the court in event of liquidation, whereby a sufficient stock of spares can be set aside to service owners of the 1,100 Swifts in operation.

Lack of Airports Delays 3 New Feeders in North-Central Area

Three more feeder airlines — Wisconsin-Central Airlines, Iowa Airplane Co., Inc., and Parks Air Transport, Inc. — were granted temporary 3-year certificates by the Civil Aeronautics Board Dec. 31 in its decision in the North Central case, bringing to an even dozen the number of new airlines authorized during the last year.

Wisconsin-Central was granted five routes totaling 1,495 miles between Chicago and Superior, Wis.; Milwaukee and Ironwood, Mich.; Milwaukee and Green Bay, Wis.; Minneapolis-St. Paul and Superior; and Green Bay and Wausau, Wis., subject to the condition that Four Wheel Drive Auto Co. has divested itself of control of the airline.

Iowa Airplane Co. was granted three routes totaling 1,251 miles between Omaha-Council Bluffs and North Platte, Neb.; Omaha-Council Bluffs and Huron, S. D.; and Omaha-Council Bluffs and Minneapolis-St. Paul.

The five routes granted Parks Air Transport totaled 1,647 miles between Chicago and Sioux City, Iowa; Chicago and Minneapolis-St. Paul; Chicago and Des Moines, Iowa; Galesburg, Ill., and Moline, Ill.; and Milwaukee and Des Moines.

The three new certificates bring the total of new feeder airline route miles authorized by the CAB during 1946 to 14,488 not counting extensions granted to Pioneer Airlines in the Texas-Oklahoma case.

In announcing its decision in the North Central case, the Board stated that due to the lack of airport facilities at many of the points, and the fact that a number of the other points cannot be served at present with appropriate aircraft, it would withhold issuance of the certificates to the three lines until a proper showing had been made by the selected carrier that it could operate the route or routes in accordance with the Board's intentions.

In addition to authorizing the three new airlines, the North Central decision amended the certificates of United Air Lines, Inland Airlines, Northwest Airlines, Transcontinental & Western Air, Mid-Continent Airlines and American Airlines to provide additional service in the North Central area.

Chicago Clinic Set for March 19-20 by CAA in 3rd Region

A two-day aviation clinic has been scheduled by the CAA and the state aeronautics commissions of the Third Region for the Congress Hotel, Chicago, March 19-20. Delegates selected at a series of meetings held in the respective states during the last few months will discuss 17 problems ranging all the way from the recasting of private flying regulations to the improvement of instrument panel lighting on personal aircraft and the elimination of local airshows.

CAA Inspectors Exchanging Old Certificates for New

Pilots whose certificates were issued prior to July 1, 1945, have been warned by T. P. Wright, Administrator of Civil Aeronautics, that they must be exchanged for new-type certificates before July 1, 1947. No red tape or written application is involved in the exchange, he said. The pilot merely presents his old-type certificate to a CAA inspector who will issue a new-type certificate immediately. The new-type certificates will be valid for at least 24 months from the date of issue, and the CAB now is considering extending them for an even longer period.

Gen. Echols Heads AIA

Major General Oliver P. Echols, AAF ret., has been elected president of the Aircraft Industries Association of America, thus becoming AIA's first paid president since 1942. General Echols was commanding general of the Air Materiel Command from March, 1942, until March, 1943, when he became assistant chief of air staff.

In announcing the selection, La Motte T. Cohu, retiring president, said that General Echols has been delegated full authority and responsibility for the operation of AIA.

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HELICOPTER COUNCIL FOR INDUSTRY GUIDANCE has been formed by Aircraft Industries Association. Members are, left to right: Seated, J. T. Geuting, Jr.; AIA; Larry Williams, McDonnell Aircraft; R. S. Firestone, Firestone Aircraft; L. D. Bell, Bell Aircraft (chairman); B. L. Whelan, Sikorsky Aircraft; W. W. Kellett, Kellett Aircraft, and J. E. P. Morgan, AIA. Standing, E. M. Benham, Sikorsky; R. V. Guelich, Firestone; R. H. Isbrandt, Firestone; W. T. Bonney, Bell; L. P. Faneuf, Bell; J. P. Perry, Firestone; L. L. Douglas, Kellett; George Neal and L. Welch Pogue, consultants.
—(AIA Photo.)

Airlines Earmark $1,000,000 for Reliability and Service Improvements

The scheduled airlines will spend more than $1,000,000 in 1947 to improve schedule reliability, better passenger service and insure safety, according to the Air Transport Association. Nearly $500,000 will be devoted to the development of new control and navigational systems employing wartime developments, and over $200,000 to aiding the CAA in relieving congestion at points such as New York, Chicago and Washington. . . . Western Air Lines has signed interline agreements with Southwest Airways and Empire Airlines under which tickets issued by the new feeders will be accepted on Western's routes. Similar agreements may be negotiated soon with Monarch Airlines, West Coast Airways and Summit Airways. . . . Hillman Air Taxi Service has been organized in Los Angeles to bring residents of nearby Orange County to the Municipal Airport for direct connections with airline schedules. At present the company is using three Stinson Voyagers.

Pioneer Air Lines, first feeder airline to be certificated by the CAB, added another "first" on December 23 when it became the first feeder to receive CAA authority to fly by instrument. Instrument operations began immediately on Pioneer's present route, and the company has made plans to apply instrument procedures to its recently granted route extensions, operation of which is scheduled to start about February 15.

Two new courses, one in airline management and the other in airline employment training, have been announced by the University of Oklahoma. They will be administered by W. M. (Bill) Morgan, former Oklahoma City representative of Braniff Airways. . . . Steamship operators of non-scheduled passenger and cargo air services in foreign trade have asked the CAB to eliminate handicaps that would place them at a disadvantage when competing with foreign operators for world markets. They claim a distinction should be drawn between foreign and domestic commerce. . . . The annual Air Transport Association Engineering and Maintenance Conference has tentatively been set for March 17-19 at St. Louis, with B. J. Vierling, Capital Airlines (PCA), presiding. Items on the agenda include ignition and electrical systems, airplane structures, cleaning and corrosion, instruments, engine accessories and components, cabin interiors, fuel and oil systems, heating and ventilating, propellers, control system, hydraulic systems and CAA procedures.

Braniff Airways has announced that feminine reservationists will now meet their customers on daily personal sales calls to downtown offices. Another new service will be the organization of charter flights to fraternal, civic and company conventions, and other group trips for businessmen. . . . In its year-end review, ATA reports that domestic companies carried 13,000,000 revenue passengers in 1946, or 78 per cent more than in 1945. Revenue passenger miles passed the 6,000,000,000 mark, a 72 per cent increase. Express and freight shipments were up 57 per cent to a total of more than 37,000,000 ton miles. Miles flown went up 43 per cent to a 300,000,000 total. Only decrease was in air mail, which dropped more than 50 per cent to an estimated total of 32,000,000 ton miles. The rate of increase in overseas operations was even more spectacular with 1,000,000 passengers carried, 1,000,000,000 revenue passenger miles flown, 24,000,000 ton miles of express and freight, 6,000,000 ton miles of air mail, and 67,000,000 miles flown. This represented percentage gains ranging from 30 for air mail to 175 for express and freight. The domestic airlines achieved a passenger fatality rate of only 1.2 per 100 million revenue passenger miles as compared to 2.17 in 1945. The overseas rate was 2.85 but compared favorably with the 3.75 figure for 1945.

The following three-point program has been proposed by the Independent Airfreight Association as essential to orderly development of the industry: 1) Certification of air freight operators as common carriers; 2) Recognition of air freight as entirely distinct from the flying of passengers; and 3) Maintaining schedules between major areas of freight origin rather than point-to-point or city-to-city service. These points have been advanced and supported by Earl F. Slick, Slick Airways, and Harry R. Playford, U. S. Airlines, Inc., in recent testimony before the CAB. . . . Members of the Independent Airfreight Association expect to carry 220,000,000 ton miles of freight in 1947, or more than 12 times the amount carried in 1946, according to Robert W. Prescott, IAA president. He bases his prediction on gains made by member lines during the last months of 1946.

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Bob Screder, Toledo, damaged prop in Georgia, sawed off tips to make Orlando for new prop (left). Map readers included Ray Gaudin [illegible]rs and Gene Gearing, Indiana. Ruth Olson and Mrs. Robert Lathrop (center) shed cold-weather garb after arriving from Wisconsin. Mr. and

PORTS of CALL

Birmingham, Ala.—*by Edith Wideman.* Shades of prewar flying are cropping up out Southern Airways way with an organization of flying clubs—all of this is being done along with modification of the Navy A-E 1's for the Department of Interior. Sid Dubose is doing the doings on the flying clubs and Bob Ward is general managing the modification.

We didn't get to the Miami Races but we enjoyed them in a smaller way right in the ole home town when fliers from Indiana, Missouri and Tennessee were weatherbound here for days. Even being weather stuck has its advantages, at times.

B. P. Autry of Roberts Field wined, dined (and then some more) all the aviation folk hereabouts at the Airdrome during the holidays. When we called to tell him a wunnerful time was had by all, he reported that nine new steel T-hangars were going up on the field—that all his available hangars were no longer available and thus made it necessary—and further that his business about this private plane market being saturated was the bunk. He had people crying for new airplanes. During

FLORIDA AIR T[illegible]

one week Charlie Preston, flying photographer, had purchased a new ship—as had Joe Sargent and Bob Roberts, both with American Life Insurance Company, and that these two boys were going to cover their territories in Alabama, Mississippi and Georgia in their new jobs. Furthermore, Hugh Gilmore from Pensacola had flown off in a brand new number. We

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audin
, and

Mrs. Robert Miller, Bloomington, Ill., were first man-wife team to reach Orlando. Norman Carpenter and Herman Buenning, Easton, Pa., brought fishing gear (right). —(College Park Studio Photos.)

TR

THREE races including one re-running, the nation's finest aerobatics, elaborate military displays and new lightplane models were witnessed by over 100,000 persons during Miami's 1947 All-American Air Maneuvers. Over 2,000 lightplanes, with gas and oil furnished by Gulf Oil to encourage cross-country flying, converged on Miami for the event.

Paul Penrose, Venice, Calif., won the $10,000 All-American Classic for NX racers, over a 15-mile closed circuit (15 laps) by averaging 307 mph. in a P-51; Charles Walling, Houston, was second with 304 mph. in a P-38; Bruce Raymond, Hammond, Ind., was third with 302 mph. in a P-51, and Steve Wittman, Oshkosh, Wis., was fourth with 284 mph. in a P-63. A confusing lightplane race won by R. C. Miller, Bedford, Ind., in a 65-hp. Aeronca was re-run after protests and the second effort was won by Steve Wittman in a Cessna 140 with Comer Starling, Hahira, Ga., second in a Cessna 120.

Bevo Howard, Orangeburg, S. C., was winner of the international aerobatic championship with 134 points. Woody Edmondson, Lynchburg, Va., was second with 87 points and Jess Bristow of Miami Shores third with 66 points. Bob Fogg of Edo demonstrated jet assist in taking off a float-equipped Cessna.

asked what he was trying to do—start an argument? Southland Aviation also reports a new Ercoupe went to Cliff Hans, state manager of St. Clair Refining.

White Aero Service, operated by John A. White, has taken over the shops and maintenance department of Central Park Flying Service and is doing a be-yuti-ful job.

The aviation committee of chamber of commerce is still tearing up heaven and earth and screaming to the skies at Washington to get an air mail post office at the airport. Hank Cross, airport manager, reports that the space is available even *now*.

Waterman has made several changes over the state. Amos Lovin, who before the war was with Eastern, has been transferred from Muscle Shoals to Birmingham and made station manager at the airport; John Stahler has been moved downtown as district manager, replacing Walter Verneunille, who went into operations in Mobile.

For the first time Birmingham is going to have direct service to Savannah with Delta's new flight via Atlanta and Augusta. And speaking of Delta reminds us of the remark Harry N. Wheeler's daughter, Harriett (she graces Delta's city office with charm and efficiency) told us about her father's first flight—from Ft. Worth to Dallas. Says he to the stewardess upon landing in Dallas: "That's the bumpiest road I've ever seen—it's been a long time since it was paved."

Dallas.—Mustang Field heard intersting tales about happenings on the Gulf Lightplane Cavalcade to Florida. A couple in a Luscombe en route home to Wichita said planes were scattered all over the Southeast, grounded by weather. In Mississippi while cruising over the tree tops they came across a Cub on a highway. It had not only landed to get out of the weather but was high-tailing it right on down the pike, auto fashion.

Some lightplane pilots stood all they could and finally left their ships staked on airports in Mississippi and came home on the train. Figured that weather might hold out.

Jim Wycoff, formerly of Southwest Airmotive, has been appointed city aviation director succeeding Jean Dubuque, who resigned in a huff over city hall politics.

? WHO ? ?? WHAT ?!

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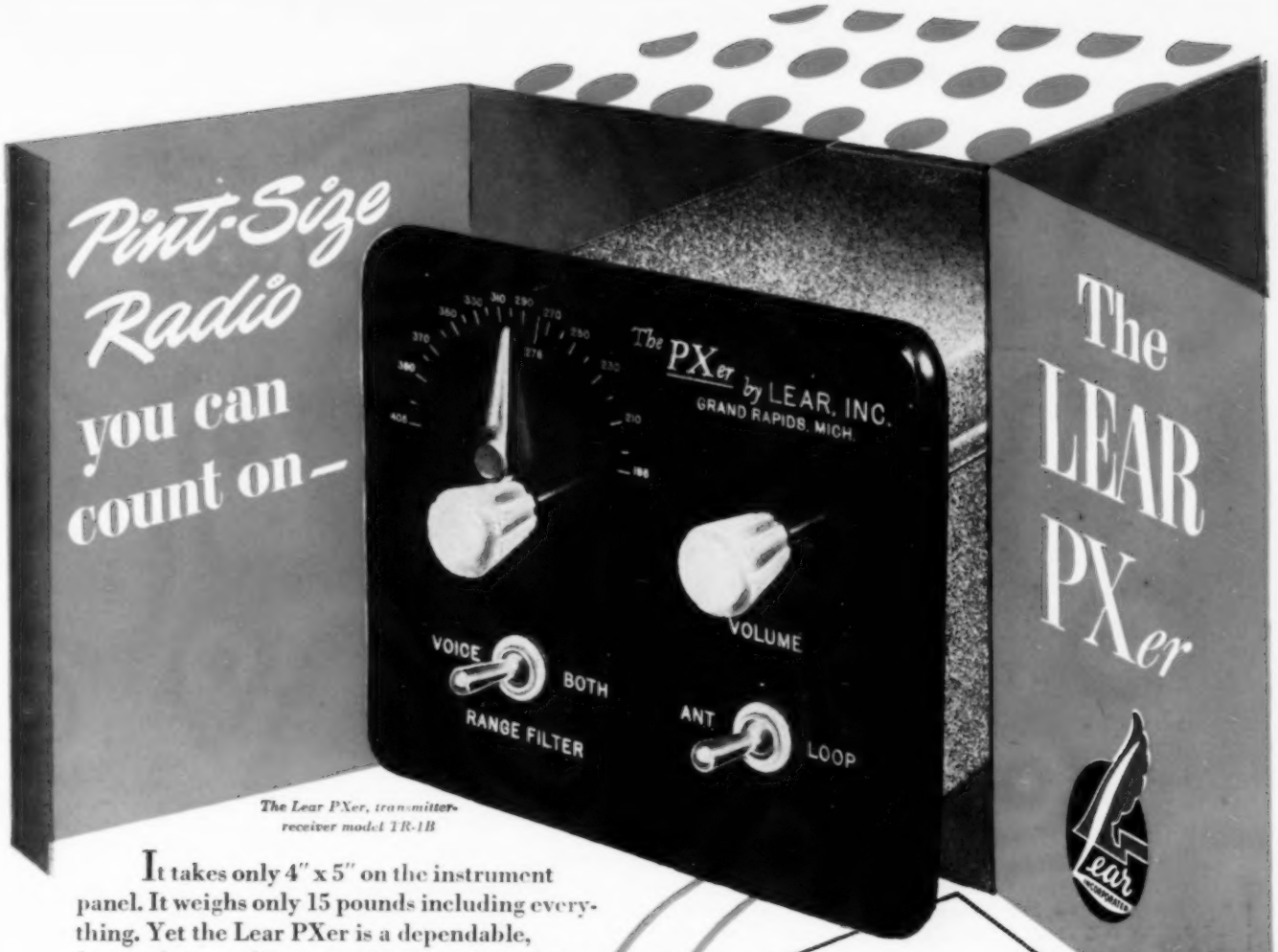

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